

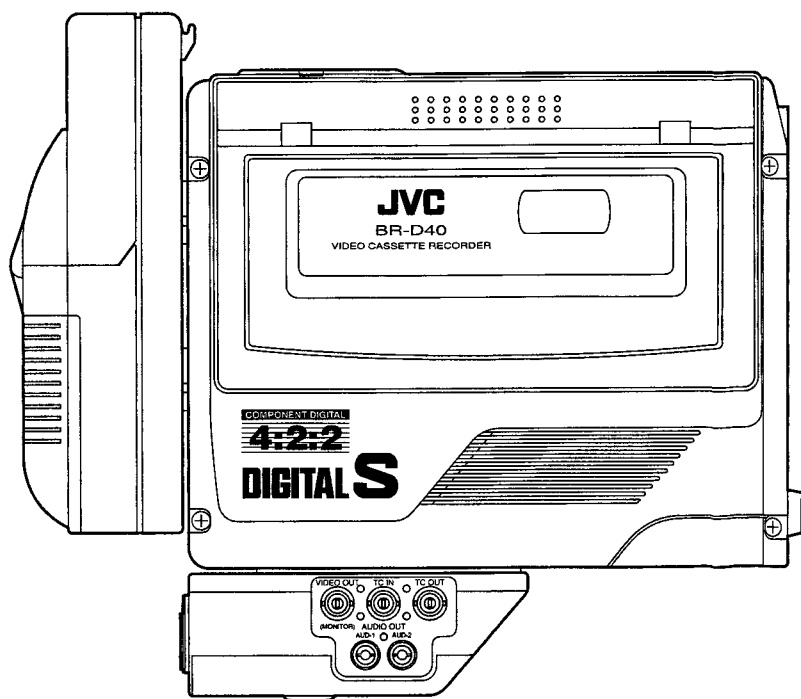
JVC

VIDEO CASSETTE RECORDER

BR-D40U/BR-D40E

INSTRUCTIONS

DIGITAL S



SAFETY PRECAUTIONS



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

This unit should be used with 12V DC only.

CAUTION:

To prevent electric shocks and fire hazards, do NOT use any other power source.

NOTE:

The rating plate (serial number plate) is on the bottom of the unit.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

INFORMATION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION

CHANGES OR MODIFICATIONS NOT APPROVED BY JVC COULD VOID USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS : (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION



ATTENTION

RISQUE D'ELECTROCAUTION
NE PAS OUVRIR



ATTENTION : POUR EVITER TOUT RISQUE D'ELECTROCAUTION
NE PAS OUVRIR LE BOITIER.
AUCUNE PIECE INTERIEURE N'EST A
REGLER PAR L'UTILISATEUR.
SE REFERER A UN AGENT QUALIFIE EN CAS DE PROBLEME.



Le symbole de l'éclair à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'une "tension dangereuse" non isolée dans le boîtier du produit. Cette tension est suffisante pour provoquer l'électrocution de personnes.



Le point d'exclamation à l'intérieur d'un triangle équilatéral est destiné à alerter l'utilisateur sur la présence d'opérations d'entretien importantes au sujet desquelles des renseignements se trouvent dans le manuel d'instructions.

* Ces symboles ne sont utilisés qu'aux Etats-Unis.

AVERTISSEMENT :

POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LA PLUIE.

Ce magnétoscope ne doit être utilisé que sur du courant direct en 12V.

ATTENTION :

Afin d'éviter tout risque d'incendie ou d'électrocution, ne pas utiliser d'autres sources d'alimentation électrique.

REMARQUE :

La plaque d'identification (numéro de série) se trouve sur le panneau arrière de l'appareil.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

WARNING ON LITHIUM BATTERY

The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C (212°F) or incinerate.

Replace battery with Matsushita Electric CR2032, use of another battery may present a risk of fire or explosion.

- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

CAUTION

To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

WARNING :

It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast, or artistic work embodied therein.

Thank you for purchasing the BR-D40 video cassette recorder.

When this unit is used in a stand-alone configuration, it can play videotapes but cannot record them. To accomplish recording with this unit, it should be integrated in a unitary connection with a professional type video camera (JVC KY-19, KY-27 series, KY-D29, etc.).

DIGITAL S

This unit is a DIGITAL S format video cassette recorder. Video cassette tapes which are not marked DIGITAL S cannot be used with this VCR.

MAIN FEATURES

- High picture quality thanks to the DIGITAL S format
The 4:2:2 component digital processing of the format ensures recording and playback with high picture quality.
- High sound quality thanks to the 2-channel PCM audio
High-quality digital audio with 16-bit, 48 kHz sampling is provided for 2 channels.
- Designed for direct, unitary connection with the camera
This unit can form a camcorder system by being combined with a JVC professional video camera such as the KY-19, KY-27 series and KY-D29 for an excellent footing for newsgathering and other recording tasks.
- Concentrated LCD display (with back light)
The concentrated LCD panel shows the time code and CTL count, tape remaining time, remaining battery power, audio levels, setup menus, hour meter data and a variety of warning indications. It is back-lighted to facilitate viewing under low light conditions.
- Time code reader/generator
The built-in time code reader/generator can be used to record SMPTE(NTSC)/EBU(PAL) time code and user's bits.
- Time code input/output connectors for slave lock capability
This unit can be slave-locked to an external time code generator which is connected to the time code input.
The data in the built-in time code generator is output from the time code output terminal.
- Balanced audio input (camera/microphone/line switchable)
Highly reliable XLR connectors are provided for audio input. Noise-proof balanced audio input ensures an enhanced sound quality.
- AEF (Automatic Edit Function) enables neat switching between scenes.
- Date/time data recording
Apart from the SMPTE(NTSC)/EBU(PAL) time code area, another time code area is provided for the recording of data on the date and time of the day.
- Built-in loudspeaker for audio checking
The input audio can be monitored in record or EE mode and the reproduced audio can be monitored in play mode.
The loudspeaker also outputs an alarm tone in case an abnormal condition occurs with the VCR.

The following symptoms will appear when the tapes recorded on other units (including BR-D40) are recorded or played back on this machine.

- The transient section between scenes recorded on other units may appear disturbed.
- Digital noise appears during playback because of tracking errors.

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Install a lithium battery (provided) before use. See page 34 for information about how to install it.

• We cannot assume the liabilities which may derive from the impossibilities of normal recording or playback in case of failure with this VCR or the video cassette in use.

INTRODUCTION

ROUTINE AND PERIODICAL MAINTENANCE

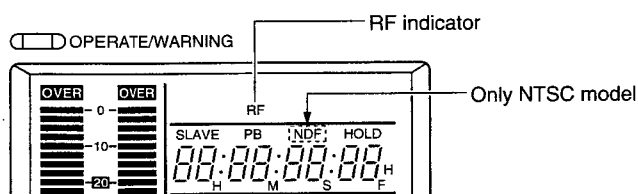
This VCR incorporates precision mechanical parts, which will collect dirt, wear out and deteriorate as the VCR is used. On the other hand, when the VCR has been used for a long period, the heads, drums and tape transport mechanisms also collect dirt deposited on them. Also, dust which penetrates the inside of the VCR specially during outdoor use will promote the wear and deterioration of mechanical parts by causing poor contact between tape and heads or failing to maintain the video and audio quality at high levels.

To prevent wear and deterioration, clean the mechanical parts using a head cleaning tape as routine maintenance. But cleaning with a head cleaning tape alone is not enough for cleaning the entire tape transport mechanism. It is also recommended to apply periodical maintenance (inspection) to prevent troubles which may be caused by the sudden occurrence of failure.

As the replacement, adjustment and servicing of parts require advanced skill and equipment, please consult the person in charge of professional video equipment at your nearest JVC-authorized service agent.

Head Cleaning

- To maintain high video and audio quality, clean the heads by using the special head cleaning tape about every 20 hours.
- Use the optional DCL-5 as the head cleaning tape.
- Do not use head cleaning tapes other than specified. Read the instructions of the head cleaning tape for its operating procedure and precautions.
- When dust is deposited on the video head of the VCR, the RF indicator lights up on the display during the back-space operation in record-pause mode. The indicator does not light up during recording.



Periodical Maintenance

Contents : Check or replace the following mechanical parts according to the running time.

Running Time	500H	1000 H	1500H	2000H
Drum ass'y (including heads)	●	●	●	●
Head cleaner	●	●	●	●
Tape guides & rollers	○	○	○	●
Fixed heads	○	○	☆	●
Belts & pinch rollers	○	●	○	●
Drive parts	○	○	☆	●

- The drum assembly (including heads) and the head cleaner should be replaced every 500 hours. ○: Clean, check and adjust. ☆: Clean and check. Replace as required. ●: Replace.
- The maintenance contents may be variable depending on the operating environment and method. Therefore, the above data should be considered as a reference.

Time management

The running time of the VCR can be confirmed with the hour meter display (which shows the drum running time). For details, see "HOUR METER DISPLAY" on page 34.

For consultations related to the maintenance programming or cost, please contact the person in charge of professional video equipment at your nearest JVC-authorized service agent.

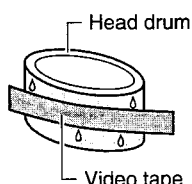
PRECAUTIONS FOR PROPER USE OF THE VCR

Handling and Storage Precautions

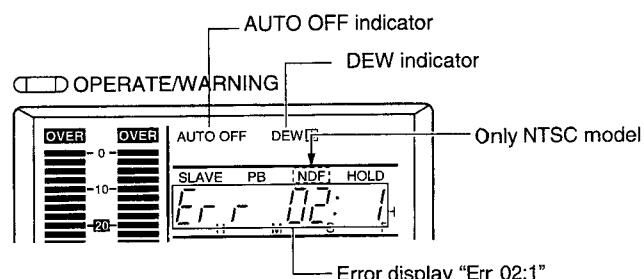
- Avoid using or placing the VCR in places;
 - subject to extreme heat or cold;
 - subject to strong magnetic or electromagnetic field (Particularly, avoid using a transceiver within a distance of 2 meters from this VCR.
 - with excessive dirt or dust;
 - with high humidity or moisture;
 - subject to smoke or vapor such as near a cooking stove;
 - subject to strong vibrations or on an unstable surface.
- Also do not leave the VCR for long hours in a parked car under direct sunlight or near room heating equipment.
- Protect the VCR from being splashed with water (especially when shooting in the rain).
- Protect the VCR against penetration of dust when using it in a place subject to sandy dust.
- Use the VCR in an upright position. If placed on its side, heat release efficiency will deteriorate, adversely affecting the tape transport.
- Do not drop or hit it against a hard object. (Special care is required to avoid shocks during transportation.)
- Remove the video cassette before transporting the VCR.
- Do not insert an object other than a video cassette in the cassette insertion slot. Be sure to close the cassette cover when the VCR is not to be used for a long period
- To avoid condensation inside the VCR, do not transport it between places with a large difference in temperature.
- Do not set the POWER switch to OFF or remove the power cable during recording or playback. Otherwise the tape may be damaged.
- When the VCR is not in use, be sure to set the POWER switch in order to OFF to save power consumption.

Condensation

- When the VCR which has been cooled down completely in a cold place is carried to a warm place, the moisture contained in the warm air may attach to the head drum or tape guides and be cooled into water droplets. This phenomenon is referred to as condensation (dewing). When this occurs in a VCR, the head drum and tape guides are covered with droplets allowing the tape to be stuck to them, leading to tape damage.
- Condensation occurs in the following cases:
 - When the VCR is suddenly moved from a cold place to a warm place.
 - When the room heater has just started or when the VCR is exposed directly to cold air from the air conditioner.
 - When the VCR is placed in a very humid place.



- When condensation occurs with this VCR, the DEW and the AUTO OFF indicator on the display lights up, the error code "Err 02:1" appears on the counter display (see page 32). To assist this, leave the VCR with the power ON and wait until the error code "Err 02:1" and the DEW indicator disappear from the display.



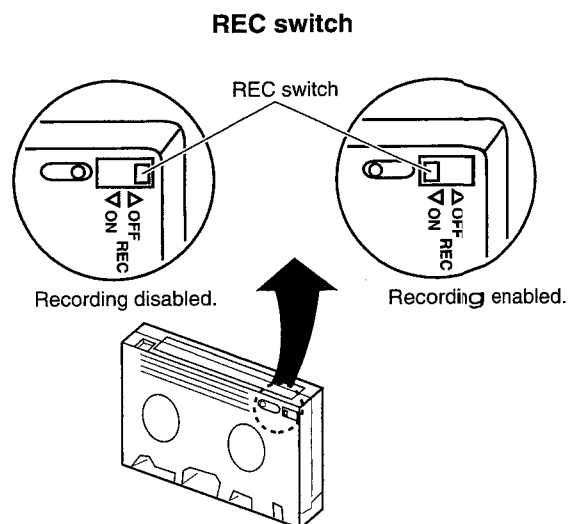
VIDEO CASSETTE TO BE USED

- Use video cassette tapes marked with DIGITAL S for this VCR. Recording and playback time of the usable video cassette models is given below.

Video Cassette Tape	Record/Play Time
DS-104	Approx. 104 min.
DS-64	Approx. 64 min.
DS-34	Approx. 34 min.
DS-10	Approx. 10 min.

- Video cassettes marked with S-VHS or VHS cannot be used with this VCR. If you insert an S-VHS or a VHS cassette in the VCR, it will be ejected automatically.
- Video cassettes cannot be used upside down.
- Avoid storing a video cassette with unevenly wound tape, as this may damage the tape. Rewind it to the beginning before placing a cassette into storage.
- After a video cassette tape has been used repeatedly, it becomes unable to maintain full performance due to an increase in noise caused by dropouts, etc. Do not continue to use a dirty or damaged tape, as this will reduce the rotary head life.

- The video cassette tape marked DIGITAL S is provided with a REC switch for use in preventing accidental erasure.
 - Slide the REC switch to OFF to protect the precious recording in the tape from being overwritten.
 - To record on the tape, slide the REC switch to ON.



BATTERY PACK TO BE USED

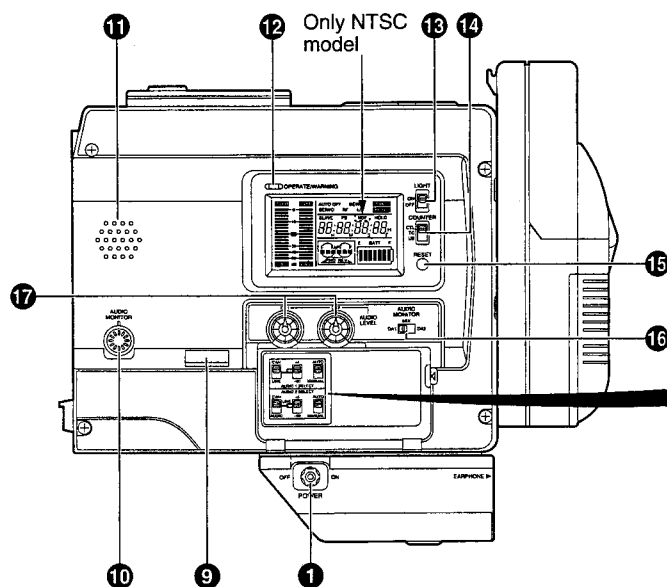
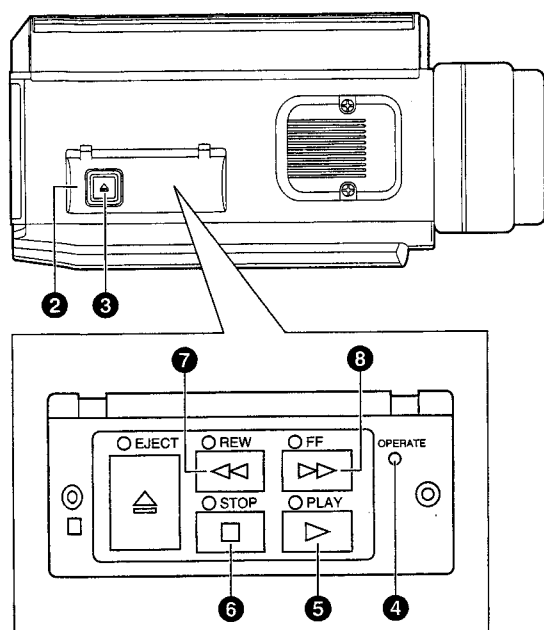
This VCR can use any of the following battery packs.

- JVC battery pack: NB-G1U
- Flat Shape Type battery pack
- Anton-Bauer battery pack : Trimpack 13/14 Series, Magnum 13/14 Series, Compac 13/14 Series.

- An Anton-Bauer battery pack cannot be attached to this VCR directly. An additional battery holder is required.
- Battery holder: Anton-Bauer model QRQ27
See page 17 for the battery holder attaching method.

To display the remaining battery power accurately, set "BATT. TYPE SELECT" in setup menu Group 4 according to the type of the battery pack in use. (See page 21)

CONTROLS, INDICATORS AND CONNECTIONS



1 POWER switch

Turns the main power supply ON and OFF. Set to OFF when neither the VCR nor the camera is used. When set to OFF, all the VCR and the camera operations are disabled.

2 Operation cover

When this cover is opened after setting the POWER switch to ON, the VCR enters OPERATE ON mode, in which the OPERATE indicator lights in green, the LCD display appears and the VCR is ready to be operated. Once the VCR enters OPERATE ON mode, it is maintained even after the operation cover is closed later. If a cassette tape has been inserted when the VCR enters OPERATE ON mode, the cassette tape remains in stop mode.

If the VCR is in OPERATE OFF mode even when the operation cover is open, the VCR can be put to OPERATE ON mode by pressing the OPERATE switch 4.

3 EJECT button

Press to eject the cassette tape. This button can be operated in any mode. It can be pressed even when the operation cover is closed. The LED indicator above the EJECT button lights up during the ejection operation.

4 OPERATE switch

This switch is interlocked with the operation cover. If the VCR is in OPERATE OFF mode even when the operation cover is open, the VCR can be put to OPERATE ON mode by pressing then releasing this switch.

5 PLAY button

Press to start playback. In play mode, the VCR outputs the video and audio signals of normal playback and the LED indicator above the PLAY button lights.

* If the autotracking is active at the moment the play mode starts, the playback video will be interfered with digital noise. The audio output during this period is the linear track audio.

* This button is not effective if pressed in the REC or REC PAUSE mode. Press the STOP button before pressing this button.

6 STOP button

Press to enter stop mode by stopping the recording and the tape transport. The drum keeps rotating in stop mode. However, when stop mode has continued for about 30 minutes, the VCR enters tape protect mode, in which the drum stops rotation and the tape tensioner is released. It takes more time than usual to enter the record or play mode from the tape protect mode. The LED indicator above the STOP button lights in stop and tape protect modes.

- The time until tape protect mode is initiated can be set to 1, 5 or 30 minutes with setup menu item "LONG PAUSE TIME SELECT".

7 REW button

Press to rewind tape.

- Pressing the button in stop or fast forward mode initiates rewind mode. The LED indicator above the REW button lights in this mode.
- Pressing the button during playback or forward search initiates reverse search at about 6 times the normal play speed. The LED indicators above the PLAY and REW buttons light during reverse search. The search audio recorded in the linear track is reproduced during reverse search.

8 FF button

Press to fast forward tape.

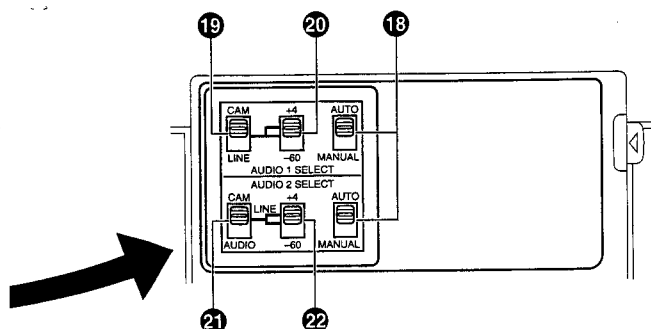
- Pressing the button in stop or rewind mode initiates fast forward mode. The LED indicator above the FF button lights in this mode.
- Pressing the button during playback or reverse search initiates forward search at about 6 times the normal play speed. The LED indicators above the PLAY and FF buttons light during forward search. The search audio recorded in the linear track is reproduced during forward search.

9 Lithium Battery Installation Case

Install a lithium battery in this case. The battery is used for the backup of the time code and the date/time data. The VCR is delivered without the battery installed. Install the lithium battery provided (CR2032). See page 34 for information about how to install it.

CONTROLS, INDICATORS AND CONNECTIONS

[AUDIO 1/2 switch setting block]



10 AUDIO MONITOR control

Adjusts the volume of the monitoring loudspeaker and earphone. The audio is muted when this control is set to the minimum position.

The volume of the alarm tones can be adjusted with the ALARM control.

11 Monitoring loudspeaker

Enables EE monitoring of the audio signal selected with the AUDIO MONITOR switch in record, record-pause or stop mode. It also reproduces the audio recorded on tape when the VCR is in play mode. The loudspeaker volume can be adjusted with the AUDIO MONITOR control.

The audio from the loudspeaker is defeated when an earphone is plugged into the EARPHONE jack. The warning alarm tones are also output through this loudspeaker.

For details, see pages 31 and 32.

12 OPERATE WARNING indicator

- This LED indicator lights in OPERATE ON mode. It lights in green while the VCR is operating normally.
- It lights or blinks in red in the case of a warning condition related to the remaining tape time, remaining battery power or other abnormal condition in the VCR.

For details, see pages 31 and 32.

13 LIGHT switch

Turns the display back light ON or OFF.

ON: The display is back-lighted.

OFF: The display is not back-lighted.

(Keep this switch to OFF during battery operation of the VCR or when it is required to reduce the power consumption for a certain reason.)

14 COUNTER switch

Selects the contents displayed on the LCD counter.

CTL : Set to this position to display the CTL counter.

TC : Set to this position to display time codes or when presetting the time code.

UB : Set to this position to display the user's bits of time codes or presetting the user's bit.

- Time codes or user's bits can be displayed provided that the TC DISP switch in the time code/setup menu setting block is set to TC. If it is set to SUB TC, the date and time data is displayed in its place.

15 RESET button

- Press to reset the CTL counter value.
- Pressing the button during time code or user's bit presetting operation resets the time code or user's bit data to "00:00:00:00".

16 AUDIO MONITOR switch

Selects the audio channel to be output at the loudspeaker and earphone jack.

DA1 : Set to this position to monitor the Digital Audio 1 channel.

MIX : Set to this position to monitor the mixed sound of the Digital Audio 1 and 2 channels.

DA2 : Set to this position to monitor the Digital Audio 2 channel.

17 AUDIO LEVEL control

Adjusts the audio recording level of the Digital Audio 1 or 2 channel when the AUTO/MANUAL switch 18 in the AUDIO 1/2 switch setting block is set to MANUAL.

Adjust so that the sound level meter peak does not exceed -5dB when large sounds are input.

- * The DA-2 AUDIO LEVEL control does not take effect when the AUDIO2 INPUT SELECT switch 21 is set to AUDIO1.

18 AUTO/MANUAL switches

Select the method for adjusting the recording level of the Digital Audio 1 and 2 channels.

AUTO : The audio recording level is held at the reference level even when sounds greater than the reference input level are input.

The recording level does not increase when the input level is low.

MANUAL : The audio recording level of each channel can be adjusted with the AUDIO LEVEL control.

19 AUDIO 1 INPUT SELECT switch

Selects the input signal to be recorded in the Digital Audio 1 channel.

CAM : Receives the audio signal of the camera microphone through the camera connector (50-pin).

LINE : Receives the audio signal input through the AUDIO 1 input connector. The reference audio input level can be selected with the AUDIO 1 INPUT LEVEL switch 20.

20 AUDIO 1 INPUT LEVEL switch

Selects the line input level of the Audio 1 channel between +4 dB and -60 dB.

21 AUDIO 2 INPUT SELECT switch

Selects the input signal to be recorded in the Digital Audio 2 channel.

CAM : Receives the audio signal of the camera microphone through the camera connector (50-pin). Set to this position when the camera uses a stereo microphone.

- The audio is not input if this position is used with a monaural camera microphone.

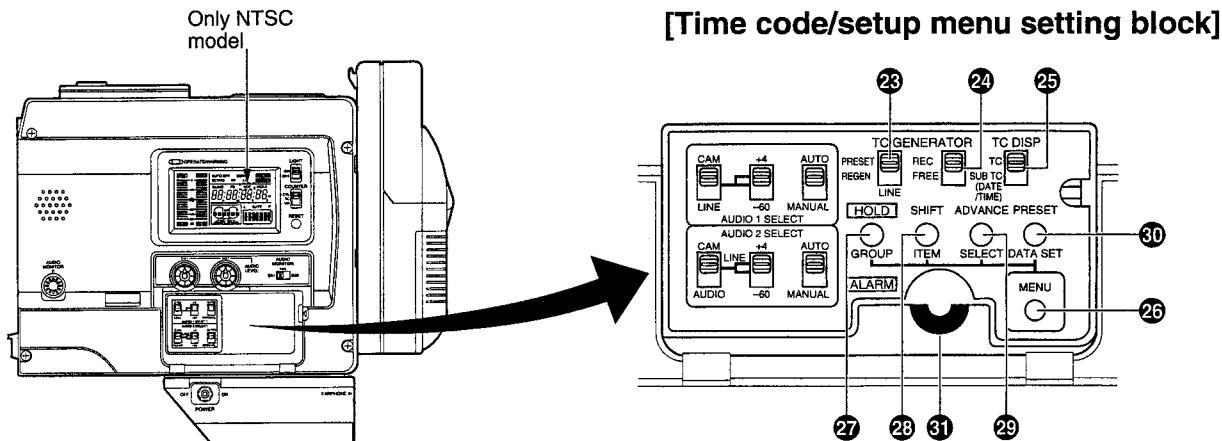
LINE : Receives the audio signal input through the AUDIO 2 input connector. The reference audio input level can be selected with the AUDIO 2 INPUT LEVEL switch 22.

AUDIO 1: Receives the audio signal selected with the AUDIO 1 INPUT SELECT switch also in the Digital Audio 2 channel. Set to this position when the camera uses a monaural microphone.

22 AUDIO 2 INPUT LEVEL switch

Selects the line input level of the Audio 2 channel between +4 dB and -60 dB.

CONTROLS, INDICATORS AND CONNECTIONS



Time code generator setting switches

23 PRESET/REGEN switch

Selects the time code generator mode between PRESET and REGEN.

PRESET : Preset mode. Set to this position when newly presetting and recording the time code. Also use this position when the camera is to be slave-locked to an external time code generator connected to the TC IN connector.

REGEN : Regeneration mode, in which the VCR reads existing time codes on the tape and records time codes by succeeding them. Set to this position when you want to connect additional time codes to a tape in which time codes have already been recorded as far as the middle.

24 REC/FREE run switch

Selects the time code running mode while the time code generator is in preset mode. This switch is not effective in the REGEN mode.

REC : The time code runs only during recording. This position allows you to record continual time codes when recording scenes one after another.

FREE : The time code runs permanently. Set to this position when the VCR is slave-locked with an external time code generator.

- If this position is used when recording scenes one after another, the time codes become discontinuous at the change points between scenes.

25 TC DISP switch

When the COUNTER switch (14) is set to TC or UB, it selects the type of time code to be displayed on the counter display.

TC : Ordinary time codes or user's bits are displayed.

SUB TC : Data in another time code area (sub-time code area) is displayed. This VCR records the date and time data in this area.

For details, see "SUB-TIME CODE" on page 29.

26 MENU button

Press to initiate setup menu mode.

In setup menu mode, the MENU indicator lights on the display and the counter display transforms to the menu display.

Pressing this button in setup menu mode returns to the normal mode.

27 HOLD/GROUP button

- Press when presetting the time code or user's bit. The presently displayed data is held (the HOLD indicator lights on the display) and the leftmost digit of the counter blinks. Pressing this button during time code or user's bit presetting cancels the operation and recalls the previous display contents.

- In setup menu mode, this button is used to select the menu group.

28 SHIFT/ITEM button

- During time code or user's bit presetting, press to select the digit to be set. Each press of the button shifts the digit to be set (which blinks) to the right.

- In setup menu mode, this button is used to select the menu item.

29 ADVANCE/SELECT button

- During time code or user's bit presetting, press to select the value of the digit to be set. Each press of the button increases the number by 1.

- In setup menu mode, this button is used to select the value of a menu item.

30 PRESET/DATA SET button

- During time code or user's bit presetting, press to save the set value in the preset memory. The set time code or user's bit will be preset in the time code generator.

- In setup menu mode, this button is used to save the menu item setting the data in the memory.

- For details of the time code or user's bit presetting, see page 27.

- For details on the setup menus, see page 20.

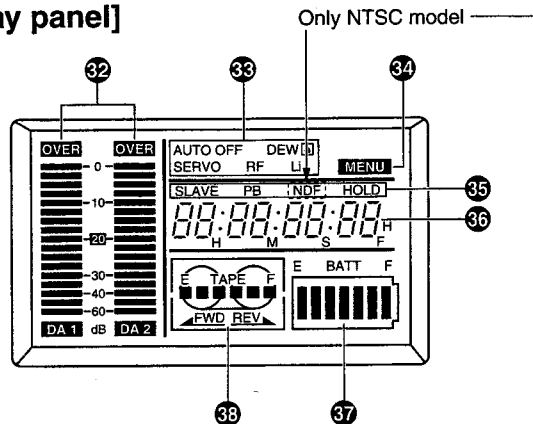
- The buttons from 27 to 30 above are also used in setting the date and time of SUB TC data. For the date and time setting, see page 30.

31 ALARM control

Turn to control the volume of the alarm tone which is output from the monitoring loudspeaker or earphone in case of a warning or other abnormal condition occurring with the VCR. Turn this control as counterclockwise to dawn the volume. Setting this control to the minimum position mutes the alarm tone.

CONTROLS, INDICATORS AND CONNECTIONS

[Display panel]



32 DA 1/DA 2 audio level meters

These are the signal level meters for the Audio 1 and 2 channels. They show the input audio signal levels when the VCR is in EE or record mode. When it is in play mode, they show the audio reproduction level of the audio recorded on the tape. The peak levels are held for about 2 seconds.

33 Warning indicators

■ AUTO OFF indicator

Lights when a non-recoverable error (e.g. tape winding error, drum stopped, etc.) occurs with the VCR. This indicator also lights if condensation occurs. For details, see "TROUBLES WITH ERROR CODE OUTPUTS" on page 32.

■ DEW indicator

Lights when condensation (dewing) occurs on the drum or other mechanism in the VCR. The VCR reject all operations while this indicator is lit. When the condensation has disappeared, the indicator turns off and the VCR accepts operations again.

■ SERVO indicator

Lights when the drum servo is troubled during recording to indicate that normal recording is not being made.

■ RF indicator

Lights when the video head is clogged. The head clog is detected during back-space between different scenes. Note that it is not detected during recording.

- Should this indicator light up, clean the head using the special head cleaning tape. See the manual for the head cleaning tape (DCL-5) which is specifically made for this unit.

■ Li indicator

This is the lithium battery indicator which lights when the lithium battery which backs up data of the built-in time code generator is nearly exhausted and indicate the necessity of replacement. See page 34 for information about how to replace lithium batteries.

34 MENU indicator

Lights up when the VCR is put to setup menu mode by pressing the MENU button.

35 Time code-related indicators

■ SLAVE indicator

This is the slave lock indicator which lights when the built-in time code generator is slave-locked (synchronized) with the LTC time code signal input at the TC IN connector. For the slave lock of the time code, see page 28.

■ PB indicator

This is the time code playback indicator which lights when the time code is in playback mode.

■ NDF indicator (Only NTSC model)

This is the non-drop frame indicator which lights when the framing mode of the built-in time code generator or the reproduced time code in play mode is in the non-drop frame mode. This indicator does not light in drop frame mode.

- It lights permanently when the CTL counter is in use.

■ HOLD indicator

Lights when the time code generator display is held by pressing the HOLD button in the time code setting block. The time code or user's bit can be preset while this indicator is lit.

36 Counter display

- Usually, this section shows the data of the CTL counter, time code or user's bit. The display mode can be selected with the COUNTER switch.

- When the COUNTER switch is set to TC or UB:
The date and time data can be displayed by setting the TC DISP switch 25 to SUB TC.

- This section shows the setup menu data when the VCR is set to the setup menu mode by pressing the MENU button. The setup menu also includes the hourmeter (drum usage).
- This section shows an error code when an abnormal condition occurs with the VCR. For details on the counter display, see page 12.

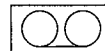
37 Remaining battery power indicator

Shows the remaining battery power with a 7-dot segment bar display.

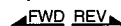
- To display the remaining battery power accurately, set the setup menu item "BATT. TYPE SELECT" according to the type of the battery pack in use. For details on the remaining battery power display, see page 12.

38 Cassette/tape direction/remaining tape time indicators

- Cassette tape : Lights when the VCR is loaded with a cassette tape. Blinks during ejection or tape loading.



- Tape direction : One of the indicators lights according to the tape transport direction.

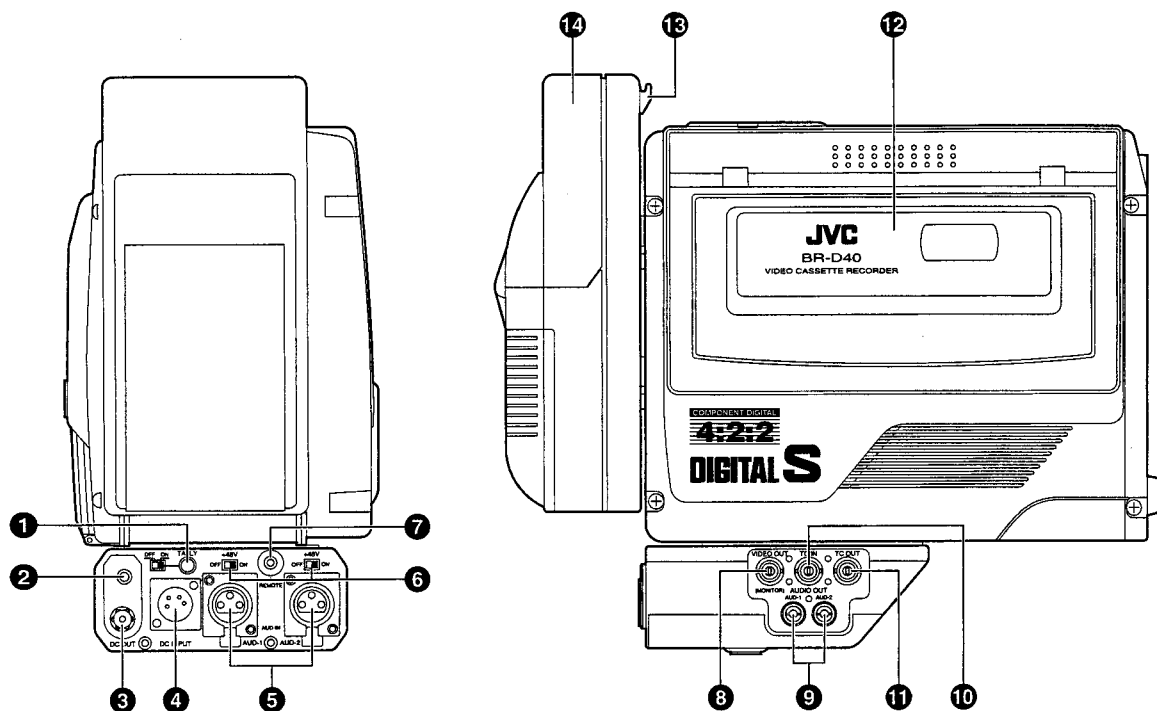


- Remaining tape : The remaining tape situation is shown with a 6-dot segment bar display.



For details on the remaining tape display, see page 12.

CONTROLS, INDICATORS AND CONNECTIONS



1 TALLY lamp/switch

- When the TALLY switch is set to ON, the tally lamp lights when the VCR is in record mode. It blinks during transition to record mode.
- The tally lamp also blinks when an abnormal condition occurs with the VCR.
For details, see pages 31 and 32.
- When the TALLY switch is set to OFF, the tally lamp does not light or blink even in the above cases.

2 EARPHONE jack

This is a stereo mini-jack for use in connecting an audio monitoring earphone. Plug in a 3.5 mm dia. earphone or headphone plug.

The earphone can also be used to monitor alarm tones depending on situations.

The sound from the monitoring loudspeaker is interrupted when an earphone is connected here.

3 DC OUT connector

Power output connector to a wireless microphone transmitter, etc. The supply voltage is identical to the voltage supplied to the VCR (DC 12V \approx max. 0.1 A).

4 DC INPUT connector (XLR 4-pin)

Power input connector for 12 V DC. Connect with the optional AA-G10 battery charger.

When a cable is connected here, the power supply from the battery pack is interrupted and the source is switched to the power supplied through this connector.

5 AUD-1 AUD-2 IN connectors (XLR 3-pin)

The Audio 1 and 2 channel input connectors function as the line inputs for connecting external audio equipment including a microphone. Set the AUDIO INPUT SELECT switch and AUDIO INPUT LEVEL switch according to the connected equipment.

6 REMOTE connector

Connect with equipment which can remote control the start and stop of recording (e.g. Sony RM-81).

7 +48V switch

Switches the +48 V power for a phantom microphone ON/OFF.

8 VIDEO OUT connector (BNC)

Composite video output connector.

It outputs the video signal from the camera in record or EE mode.

It outputs the video signal reproduced from the tape in play mode.

- No compensation is made for the setup level.
- The setup menus, time codes and date/time data are not output.

9 AUDIO OUT connectors (RCA)

Analog audio output connectors, which output the audio signal from the camera in record or EE mode and the audio signal reproduced from the tape in play mode.

The alarm tone is not output.

10 TC IN connector (BNC)

Input connector for the SMPTE(NTSC)/EBU(PAL)-standard LTC signal. The built-in time code generator can be slave-locked with the input time codes.

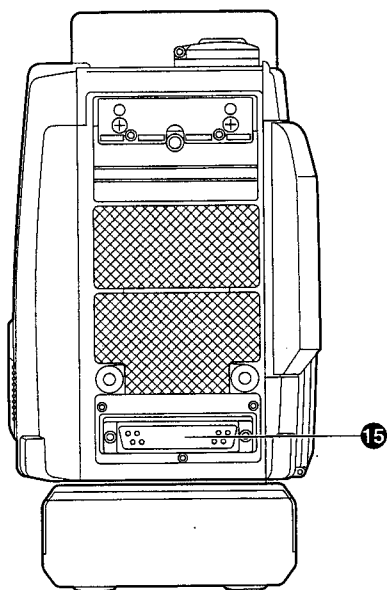
For the slave lock of time code, see page 28.

11 TC OUT connector (BNC)

Output connector for the LTC signal from the built-in time code generator.

The time code recorded on the tape is not output in play mode.

CONTROLS, INDICATORS AND CONNECTIONS



12 Cassette cover

When the VCR is in OPERATE ON mode, pressing the EJECT button on the top of the VCR opens this cover so that a cassette tape can be inserted or removed from the VCR. The cover can be locked automatically by pushing and closing it.

- To prevent penetration of foreign objects in the VCR, do not leave the VCR with the cassette cover open.

13 Battery case release button

Push to unlock the battery case cover. The battery case cover should be opened while pushing this button.

14 Battery case

Load a Flat Shape Type battery pack or the JVC NB-G1U battery pack.

For details, see "ATTACHING THE BATTERY PACK" on page 16.

15 Camera connector (D-sub 50-pin)

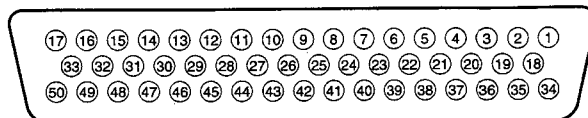
For connection with the 50-pin connector of the camera to be connected.

The power supplied to the camera is 12 V at max. 1.7 A (max. 20 W).

- It is not possible to connect the RM-G410 editing control unit to this VCR.

CONNECTOR PIN LAYOUTS

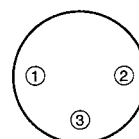
Camera Connector (50-pin)



No.	Signal	No.	Signal
1	+5V	33	GND
5	POWER GND	35	GND
6	POWER GND	36	B-Y IN
13	VTR ID OUT	38	PB(L) OUT
15	MIC1 GND	39	POWER SUPPLY (12V)
16	MIC1 (C)	40	POWER SUPPLY (12V)
17	MIC1 (H)	41	Y IN
18	RETURN VIDEO OUT	42	GND
22	MIC2 GND	43	COMPOSITE VIDEO IN
23	MIC2 (C)	45	CAMERA ID IN
24	MIC2 (H)	46	S-VHS(L) OUT
25	SAVE CONTROL IN	47	SERIAL DATA IN
26	RETURN SW IN	48	VTR STATUS OUT
27	VTR START/STOP	49	REC TALLY OUT
29	R-Y IN	50	WARNING SIG OUT
32	RETURN AUDIO OUT		

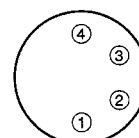
Other pins are not used by this VCR.

AUD-1/AUD-2 IN Connectors (XLR 3-pin)



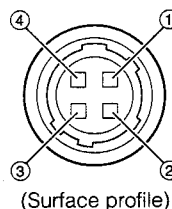
NO.	Signal
①	GND
②	HOT
③	COLD

DC INPUT Connector (XLR 4-pin)



NO.	Signal
①	GND
②	—
③	—
④	+12V

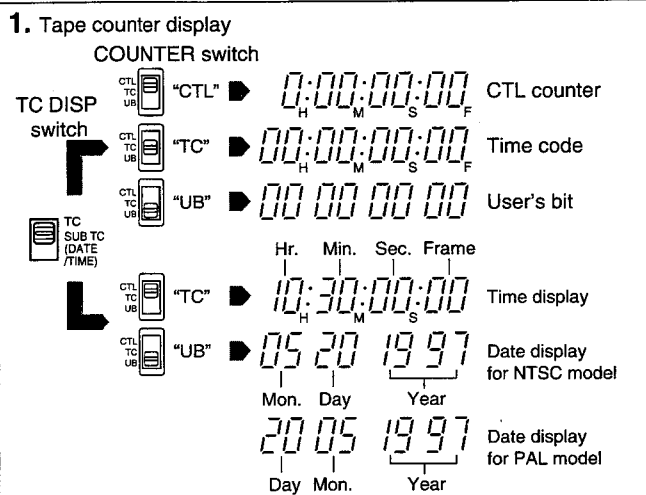
DC OUTPUT Connector



NO.	Signal
①	GND
②	—
③	—
④	+12V (Power through)

CONTROLS, INDICATORS AND CONNECTIONS

COUNTER DISPLAY CONTENTS



[MENU] button

In case of VCR error

2. Setup menu setting display

4:tc 0:df

[GROUP] button

3. Hour meter display

1:dr 02 00h

4. Error code display

Err - 02: 1

Remaining Tape Time Display

The 6-dot segment bar display shows the remaining tape time in record and play modes. The lighted segment bars decrease as the remaining tape decreases.

The reference tape time is as shown below.

(■ : Lighted, ■ : blinked.)

E TAPE F ■ ■ ■ ■ ■ ■	Near the beginning of tape
E TAPE ■ ■ ■ ■ ■ ■	More than 25 minutes of remaining tape. ("F" extinguished.)
E TAPE ■ ■ ■ □ □ □	10 to 15 minutes of remaining tape. (This display represents the beginning of the tape in the case of DS-10.)
E TAPE ■ □ □ □ □ □	2 to 5 minutes of remaining tape.
E TAPE ■ □ □ □ □ □	Less than 2 minutes of remaining tape. (The last dot and "TAPE" blink.)
E TAPE ■ □ □ □ □ □	End of tape. ("TAPE" and "E" blink.)

- When the tape has ended completely, a warning is provided by an alarm tone, etc.
- The remaining tape information is not displayed when no cassette tape is loaded or during the remaining tape calculation which takes place immediately after a cassette tape is inserted.

The counter display shows the following 4 types of information.

1. Tape counter display

The counter display usually functions as a tape counter (hour, minute, second, frame). It can be switched to a CTL counter, time code or user's bit display by using the COUNTER switch. (Provided that the TC DISP switch is set to TC)

- CTL counter : Time between -9 hr. 59 min. 59 sec. 29(NTSC)/24(PAL) frames and 9 hr. 59 min. 59 sec. 29(NTSC)/24(PAL) frames can be displayed. The run mode is fixed at the non-drop frame mode.
- Time code : Time between 0 hour and 23 hr. 59 min. 59 sec. 29(NTSC)/24(PAL) frames can be displayed.
- User's bit : Hexadecimal number from 00 to FF is displayed in 8 digits.

By setting the TC DISP switch under a cover on the side panel to SUB TC, the time and date data can be displayed here.

- When the COUNTER switch is set to TC : The time (hour, minute, second, frame) is displayed.
- UB : The date (month, day, year) is displayed.

- Press the MENU button to switch to the setup menu setting display.

2. Setup menu setting display

This display is used when setting the setup menus.

After having set the setup menus, press the MENU button to return to the tape counter display.

For details, see "SETUP MENUS" on page 20.

3. Hour meter display

The hour meter is displayed in the setup menu Group 1.

The hour meter data refers to the head drum running time.

4. Error code display

The error code is displayed automatically in case an abnormal condition occurs with the VCR.

For details of error codes, see "TROUBLES WITH ERROR CODE OUTPUTS" on page 32.

Remaining Battery Power Display

The 7-dot segment bar display shows the remaining battery power. The lighted segment bars decrease as the remaining battery power decreases.

- To display the remaining battery power accurately, set the setup menu item "BATT. TYPE SELECT" according to the type of the battery pack in use.
- The menu has been set for a Flat Shape Type battery pack (12V) or the JVC NB-G1U when the VCR left the factory.



All segment bars light when a fully-charged battery pack is attached.



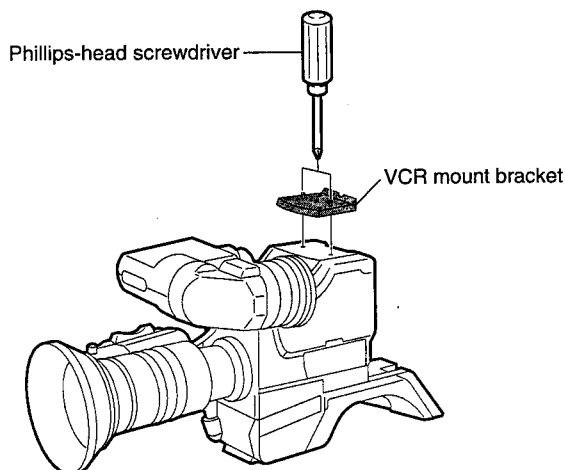
The last 2 segment bars and "BATT" start to blink when the battery is nearly exhausted. Replace with a fully-charged battery pack.



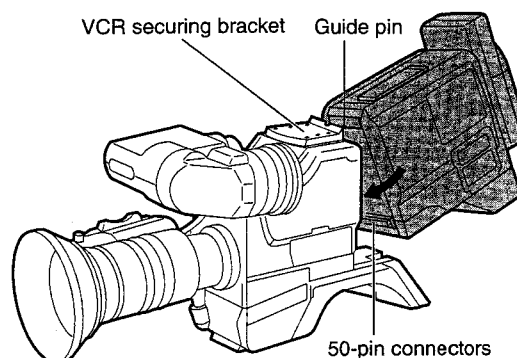
When the battery capacity has run out, "E" and "BATT" blink and the VCR stops operation automatically. It will enter the OPERATE OFF mode.

UNITARY CONNECTION WITH CAMERA

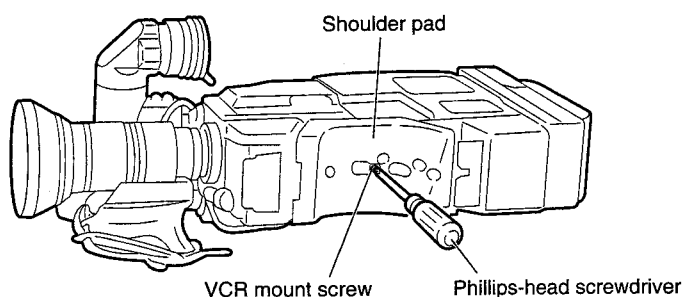
1. Separate the camera adapter from the camera and attach the shoulder pad.
 - With the KY-27 or KY-D29 camera, the VCR mount bracket has been removed before attaching the camera adapter. Attach the removed VCR mount bracket again before connecting the camera with this VCR.



2. Connect the 50-pin connectors of the BR-D40 and camera by aligning and fitting the guide pin of the BR-D40 into the V-groove on the VCR mount bracket of the camera.

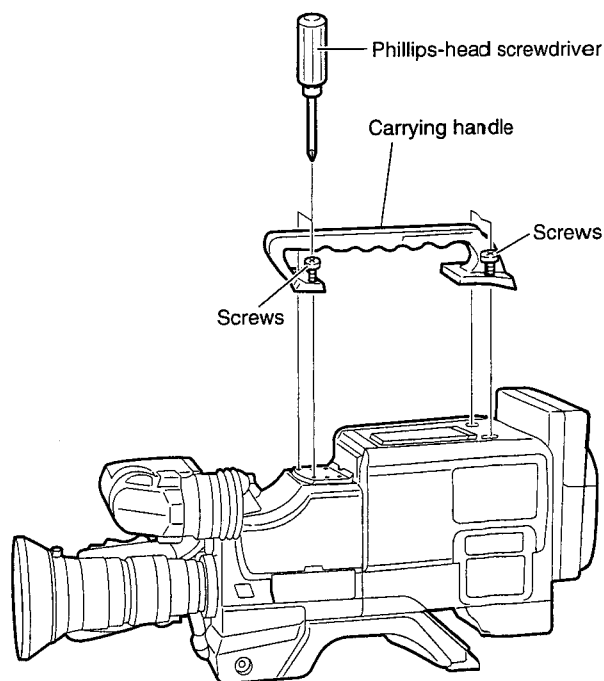


3. Insert a Phillips-head screwdriver through the hole on the camera shoulder pad and fasten the VCR to the camera by turning the VCR mount screw.



- * Use M4 screws as VCR mounting screws. Ensure that the installation length to the VCR is no longer than 4 mm.
- * For the JVC camera, use the screws supplied with the camera.

4. Fasten the provided carrying handle with 4 screws as shown below.

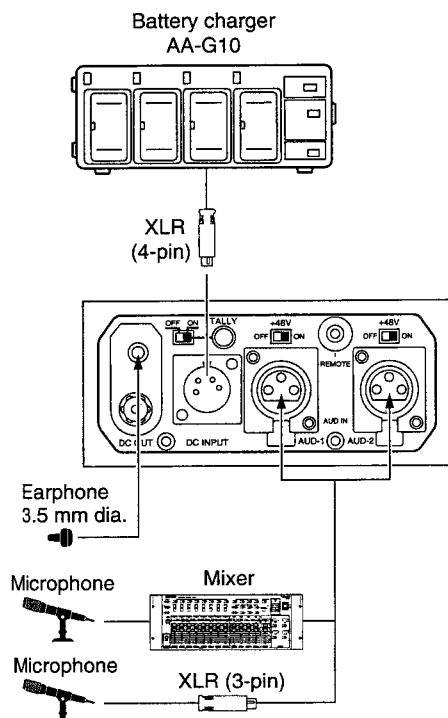


CAUTION

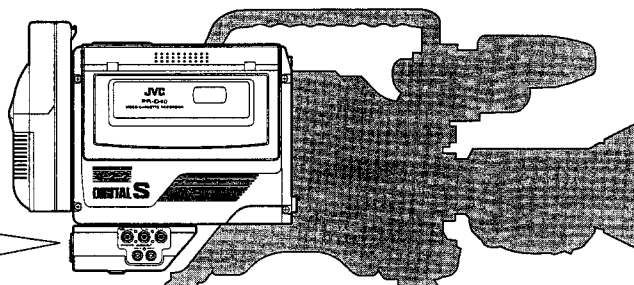
Tighten the screws securely. Otherwise the VCR may drop from the camera during use.

SYSTEM CONNECTIONS

For Recording

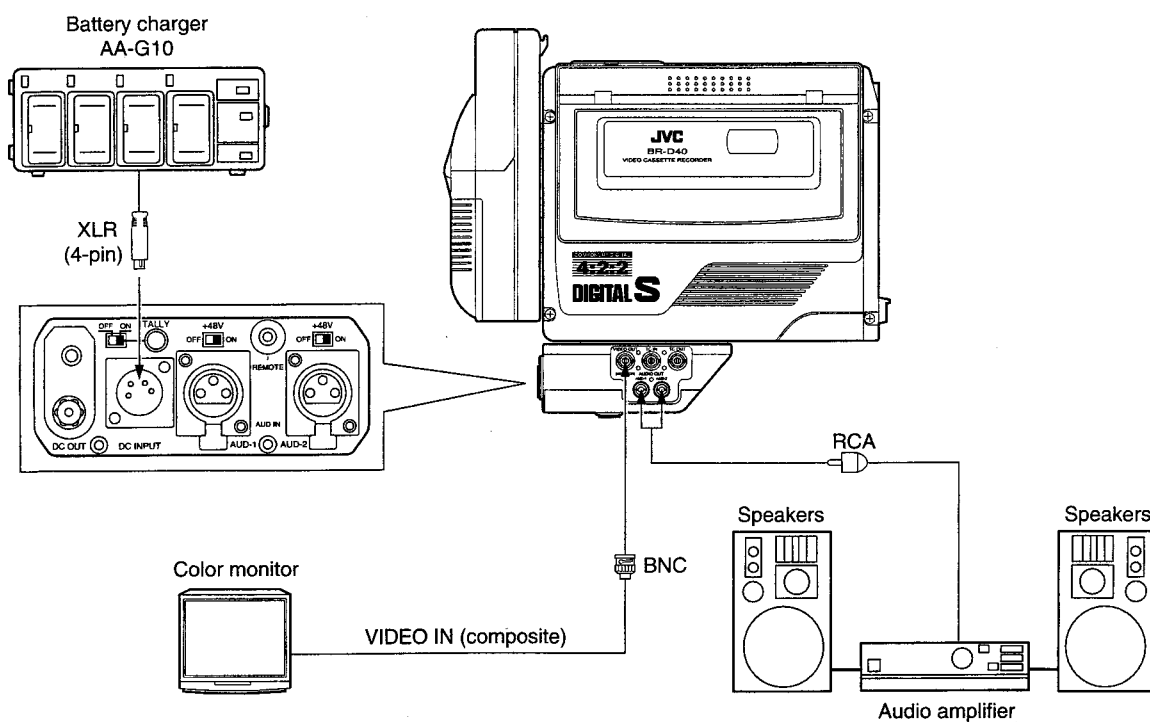


This VCR can record signals only when it is combined with a camera in unitary connection.



- Be sure to match the impedance of the camera and camera microphone. If the level is different, the audio signal may be recorded at a low level.

For Playback



POWER SUPPLY

The power of the VCR can be supplied from the following sources.

1. AC operation

Use the JVC AA-G10 battery charger (max. rated output 4 A, 12 V DC) as the AC power supply.

2. Battery operation

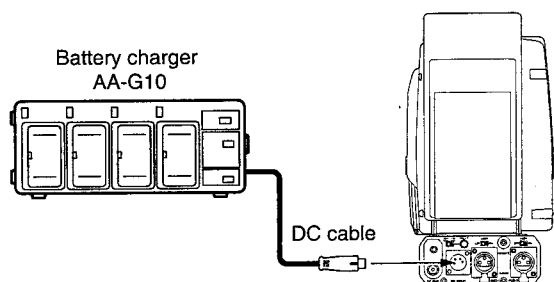
Usable battery packs

- JVC battery pack : NB-G1U
- Flat Shape Type battery pack
- Anton-Bauer battery pack : Trimpack 13/14 Series, Magnum 13/14 Series, Compack 13/14 Series.

- When using an AA-P250 as the AC power source, use a camera whose power consumption is less than 13W.
- Do not use any power source with large fluctuations in the power source voltage as with ripples or other noise.

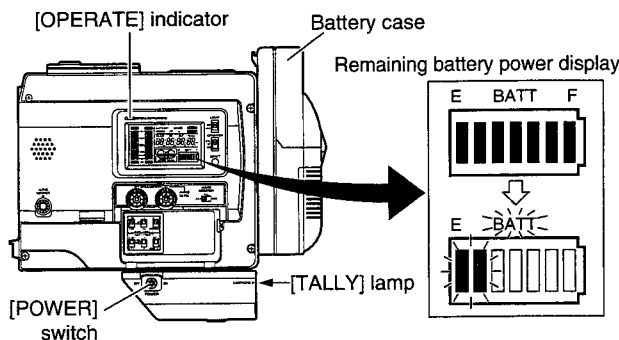
- An Anton-Bauer battery pack cannot be attached to this VCR directly. An additional battery holder is required.
- Battery holder: Anton-Bauer model QRQ27
See page 17 for the battery holder attaching method.

AC OPERATION USING THE AA-G10 BATTERY CHARGER



1. After making sure that the power switches of the VCR and of the AA-G10 are set to OFF, connect the DC cable from the AA-G10 to the DC INPUT connector of the VCR as shown in the illustration.
2. Push the VCR switch of the AA-G10 to ON then press its POWER button to ON.
3. Press the POWER switch of the VCR to ON.
Now power is supplied to the VCR as well as the camera.
 - To use the VCR, put it in OPERATE ON mode (see page 18).
 - For details, read the instruction manual of the AA-G10.

BATTERY OPERATION



1. Attach a fully-charged NB-G1U or other Flat Shape Type battery pack onto the battery case.
For the attaching method, see page 16.
 - An Anton-Bauer battery pack cannot be attached to the battery case of this VCR.
2. Set the POWER switch of the VCR to ON.
Now power is supplied to the VCR and camera.
 - To use the VCR, put it in OPERATE ON mode (see page 18).

- When the DC cable is connected to the DC INPUT connector, the power supply from the battery pack is interrupted and the power starts to be supplied through the DC INPUT connector.

Recharging the NB-G1U Battery Pack

The NB-G1U battery pack should be recharged using the AA-G10 or AA-P250 battery charger. The AA-G10 battery charger can recharge up to four NB-G1U units successively.

Recharging procedure (for AA-G10)

Battery packs are recharged in sequence by spending 60 to 90 minutes for each. Finally, they are topped up simultaneously by normal recharging for 1 hour.

- Be careful against over-charging. The battery pack should be discharged completely before being recharged.
If a battery pack is recharged before it has been completely discharged, the available operating time may be reduced.

Battery Caution

- Do not leave a battery pack under high temperatures (e.g. in a car under direct sunlight). Otherwise battery fluid leakage or shortening of the service life may result.
- When a battery pack is used in a cold environment (below 10°C), the operating time is reduced even with a fully-charged battery pack.
- If the available operating time with a fully-charged battery pack decreases considerably, it is a sign that the service life of the battery pack is almost ending. Purchase a new battery pack in this case.

■ Remaining battery power display

The remaining battery power can be confirmed on the LCD (see page 12).

- When the battery power is nearly exhausted, the last 2 segment bars and the "BATT" indicator of the remaining battery power display blink, and the OPERATE indicator and TALLY lamp blink in red.
When the above blinking starts, replace the battery pack with a fully-charged battery pack as soon as possible.
- If the same battery pack continues to be used after the blinking has started, the VCR eventually stops operation and enters the OPERATE OFF mode.

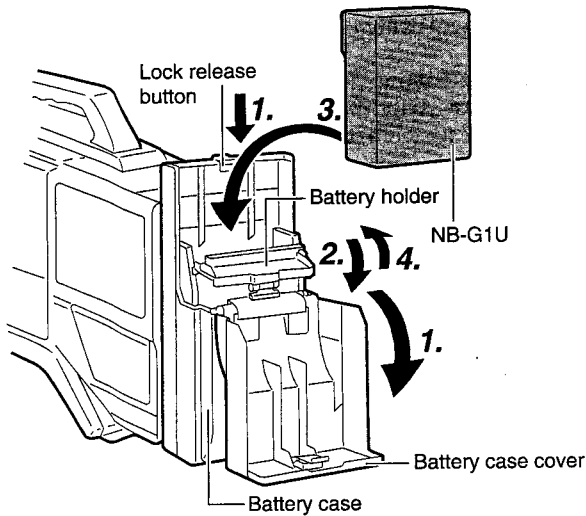
- To display the remaining battery power accurately, set the setup menu item "BATT. TYPE SELECT" according to the type of the battery pack in use. This item has been set at the factory to either the NB-G1U or the Flat Shape Types (12VDC).

- When the VCR is used in an unitary connection with the KY-27 camera, about 30 minutes of battery operation is possible using a NB-G1U battery pack (at an average current of 2.2 A/hr). However, this period is merely a reference value and variable depending on the age, running time and the recharging condition of the battery pack. For example, the available operating time may be reduced when zooming is used frequently.

POWER SUPPLY

ATTACHING THE BATTERY PACK

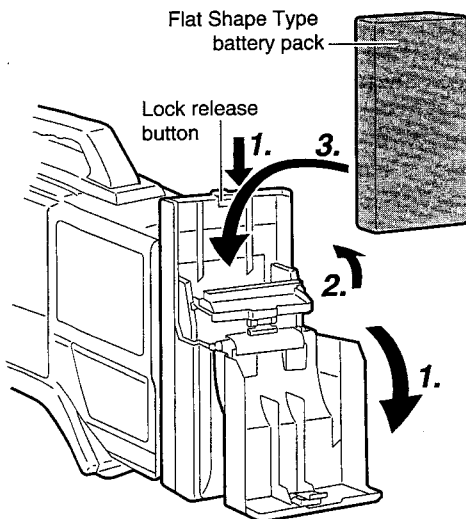
Attaching the NB-G1U Battery Pack



1. Open the battery case cover while pushing the lock release button.
2. Tilt the battery holder in the arrow-indicated direction.
3. Insert the battery pack into the battery case with its electrodes facing the VCR.
4. Close the battery holder in the arrow-indicated direction and close the battery case cover.

- To avoid damage to the battery holder, be sure to close the battery holder before closing the battery case cover.
- Turn the power of both the VCR and camera OFF before replacing the battery pack.

Attaching a Flat Shape Type Battery Pack



1. Open the battery case cover while pushing the lock release button.
2. Tilt the battery holder in the arrow-indicated direction.
3. Insert the battery pack into the battery case with its electrodes facing the VCR.
4. Close the battery case cover.

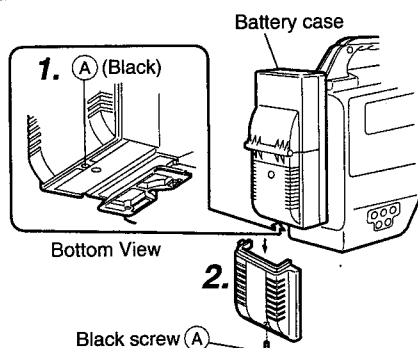
- Turn the power of both the VCR and camera OFF before replacing the battery pack.

ATTACHING AN ANTON-BAUER BATTERY PACK

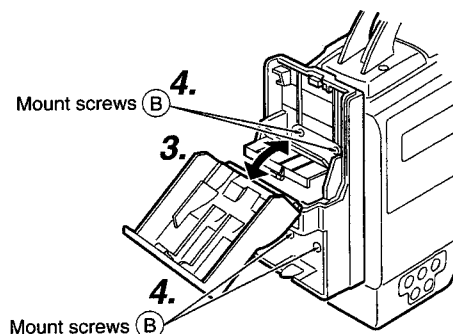
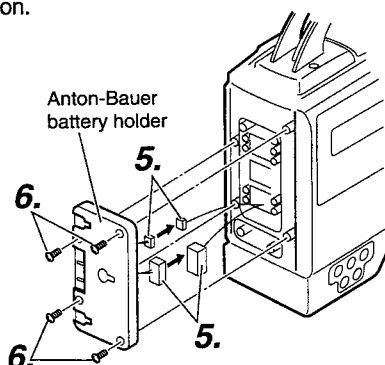
When an Anton-Bauer battery pack (Trimpack 13/14, Magnum 13/14, Compac 13/14 Series) is used, it is required to remove the battery case from the VCR and attach the Anton-Bauer battery holder in place. Use the battery holder model described below.

• Battery holder : Anton-Bauer model QRQ27

Removing the Battery case from VCR and Attaching Anton-Bauer Battery Holder In Place



1. Remove the black screw (A) from the bottom of the battery case.
2. Remove the lower half of the battery case cover in the downward direction.



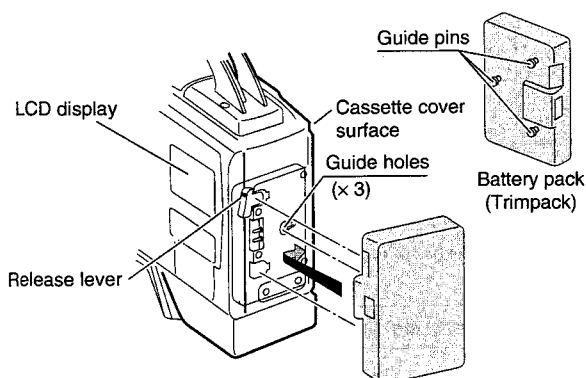
3. Open the battery cover and battery holder.
4. Remove the 4 mount screws (B), disconnect the connectors between the VCR and the battery cover, and separate the battery case from the VCR.

Attaching the Anton-Bauer battery holder

5. Connect the connectors from the VCR and those of the battery holder (connect 2 pairs of connectors including the large and small ones).
6. Secure the battery holder onto the VCR using the 4 mount screws supplied with the battery holder.

• Be careful not to pinch the connector wires; otherwise a malfunction may result.

Attaching/Detaching Anton-Bauer Battery Pack

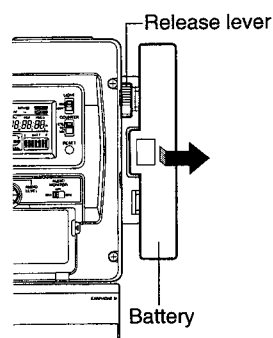


Attaching the battery pack

1. Align the 3 guide pins of the battery pack with the guide holes on the battery holder, and push straight to insert the battery pack. The battery cannot be attached properly if the guide pins are not inserted straight.

2. Slide the battery pack toward the side panel where the cassette cover is located until it clicks.
→ Now the battery pack has been attached.

Detaching the battery pack




■ While pushing and holding the release lever, slide the battery pack toward the side panel where the LCD display is located, then pull the battery pack outward to remove.

PREPARATION

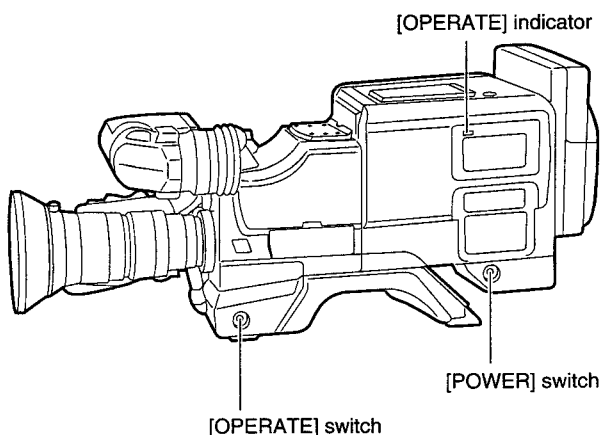
SWITCHING OPERATE ON/OFF

The VCR operations are possible only when it is in OPERATE ON mode.
The VCR can be put to OPERATE ON mode in two ways.

- 1.** Set the POWER switch of the VCR to ON.
- OFF  ON
POWER

Switching OPERATE ON from the camera

- 2.** Set the Operate switch of the camera to "VTR STBY".
→ The VCR enters OPERATE ON mode and the OPERATE indicator lights in green.



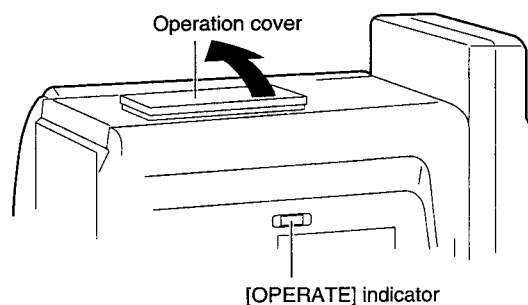
- If a recordable cassette tape has been loaded in the VCR, the VCR enters the record-pause mode (provided that the REC switch on the cassette tape is set to ON).

To return to OPERATE OFF mode

- Set the OPERATE switch of the camera to "VTR SAVE".
→ The VCR enters OPERATE OFF mode and the OPERATE indicator turns off.

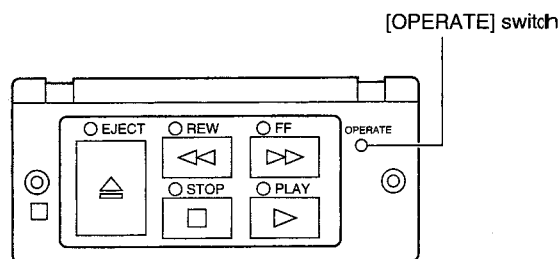
Switching OPERATE ON from the VCR

- 2.** Open the operation cover.
→ The VCR enters OPERATE ON mode and the OPERATE indicator lights in green.



- Switching the power ON with the operation cover open will activate the OPERATE ON mode.

- Press the OPERATE switch if the VCR does not enter OPERATE ON mode even when the operation cover is opened.



- 3.** The VCR remains in OPERATE ON mode even after the operation cover is closed.

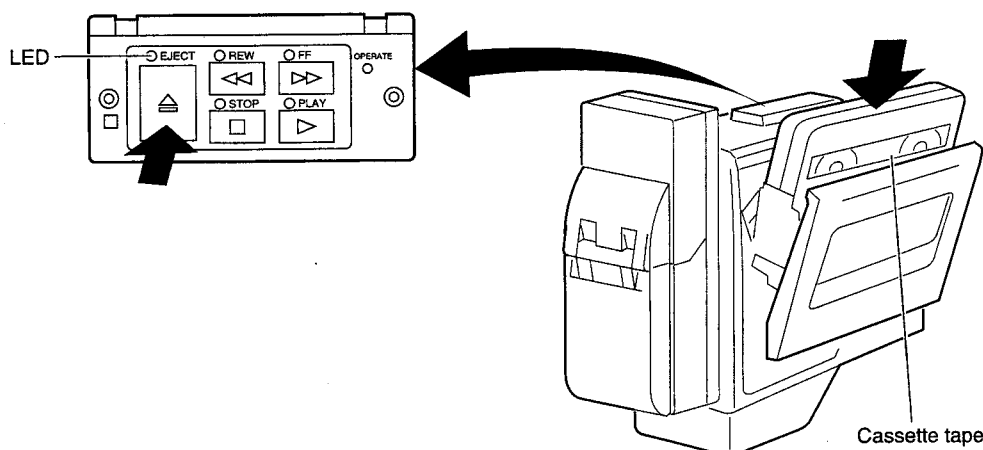
To return to OPERATE OFF mode

- In stop mode or after ejecting the cassette, set the POWER switch of the VCR to OFF.

CASSETTE LOADING AND UNLOADING

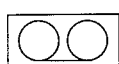
A cassette tape can be loaded in or unloaded from the VCR while it is in OPERATE ON mode. These operations are not possible in OPERATE OFF mode.

- Use a video cassette tape marked DIGITAL S.
- A S-VHS or VHS video cassette tape cannot be used with this VCR. If you insert a S-VHS or VHS cassette in the VCR, it will be ejected automatically



Loading the Cassette

1. Press the EJECT button to open the cassette cover. The LED indicator above the EJECT button lights and the cassette cover opens.
2. Insert a cassette tape after removing the tape slack.
3. Slowly close the cassette cover by pushing it in all the way. The tape is loaded automatically when the cassette cover is closed.



The cassette indicator on the display blinks during tape loading and lights steadily after the loading has been completed.


- The condition at the completion of loading is variable depending on the OPERATE switch of the camera and the REC switch on the back side of the cassette tape as shown below.

OPERATE switch of Camera	REC switch of Cassette Tape	
	ON	OFF
VTR STBY	Enters record-pause mode after back-spacing.*	The VCR enters stop mode.
VTR SAVE or when camera is not connected	The VCR enters stop mode.	

- It is possible to start recording from the record-pause mode by pressing the VTR Start/Stop button of the camera. For the recording procedure, see page 23.

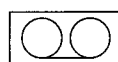
- After the cassette cover is closed, it takes about 10 seconds before the VCR can start recording or enter the stop mode.

CAUTION

When closing the cassette cover, be sure to push it in all the way. When the cassette cover is not closed completely, it is left in a half-locked state, in which the VCR accepts no operation. In this case, push the cover again all the way to get it locked firmly. When the cassette is in place and the cassette cover is only half-locked, the  cassette indicator in the LCD display will not appear. When the cassette cover is properly locked, the indicator is displayed.

Unloading the Cassette

1. Press the EJECT button.
→ The LED indicator above the EJECT button lights and tape ejection starts.



The cassette indicator on the display blinks during tape ejection and turns off after the ejection has been completed.

It takes a few seconds before the cassette cover opens after the EJECT button is pressed.

2. Take out the cassette tape.
3. Close the cassette cover.

CAUTION

Do not leave the VCR for a long period with the cassette cover open. Otherwise dirt or other foreign objects may enter the VCR, and cause malfunction.

SETUP MENUS

The setup menus can be set by referring to the counter display of the VCR. The set contents are stored in the memory and held even after the power is switched OFF.

SETUP MENU CONFIGURATION

The setup menus are divided into 4 groups. Groups 1, 2 and 3 consist of display-only items such as the hour meter display, while Group 4 contains some items which can be set individually as required.

Setup menus	Display/Setting Contents
Group 1	Hour meter (Drum running time) display
Group 2	Remaining tape (hour:min.) display
Group 3	Battery voltage display
Group 4	<ul style="list-style-type: none"> Item : Selection of time code generator framing mode (drop frame/non-drop frame) Item : Selection of user's bit during slave locking to time code (ON/OFF) Item : Selection of battery type (12 V/13.2 V/14.4 V) Item : Selection of long pause time (1 min./5 min./30 min.) Item : Selection of low-frequency cutting of audio input signals (OFF/ON/CH1 only/CH2 only)

DISPLAYING AND SETTING SETUP MENUS

NTSC model

[Display example 1]
Group 1: Hour meter display

1:dr 02 00_H

Drum running time
(200 hours)

Group No.

[Display example 2]
Group 4: Time code framing mode setting

4:tc 0 :df

Item name
(TCG SELECT)

Set value (Drop-frame)

PAL model

[Display example 1]

1:dr 02 00_H

Drum running time
(200 hours)

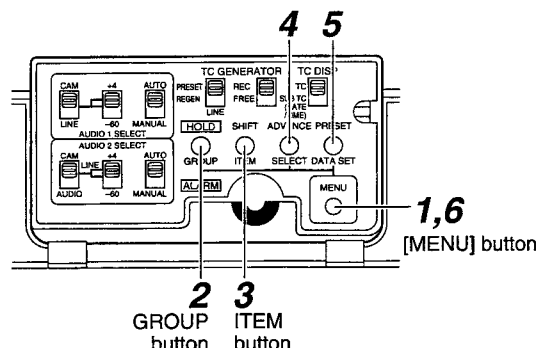
Group No.

[Display example 2]
Group 4: User's bits slave on/off

4:Et Ub:of

Item name
(U-BIT SLAVE)

Set value (off)



- Enter setup menu mode.
Press the MENU button.
→ The MENU indicator lights on the display and the counter display shows the setup menu.
- Select the group.
Press the GROUP UP button.
→ The group No. shown on the counter display changes.
 - Each press of the GROUP button changes the displayed group No. from Group 1 Group 2 Group 3 Group 4 Group 1....
- To exit from setup menu mode after simply confirming the display in Group 1, 2 and/or 3, press the MENU button now. The VCR returns to normal mode.
- Proceed to the following steps when you want to confirm or set the setup menus in Group 4.

- Select a Group 4 item.
Press the ITEM button
→ The setup menu item shown on the counter display changes.

- Pressing the ITEM button when the Group 1,2 or 3 display is shown does not change it.

- Select the setting value of the selected setup menu item.
Press the SELECT button to select the setting value.
• Repeat steps 3 and 4 above for each of the items you want to set.
- Save the setting value.
Press the DATA SET button.
→ "SAVE" is displayed on the counter and the setting value is saved in the VCR memory. The counter display returns to the setup menu display when data has been saved.
- Quit setup menu mode.
Press the MENU button.
The VCR returns to normal mode.

- If setup menu mode is quitted without saving the setting value changed with the SELECT button, "Abort" is displayed on the counter display for about 3 seconds.
To display the previously operated setup menu again, press the MENU button again while "Abort" is displayed.

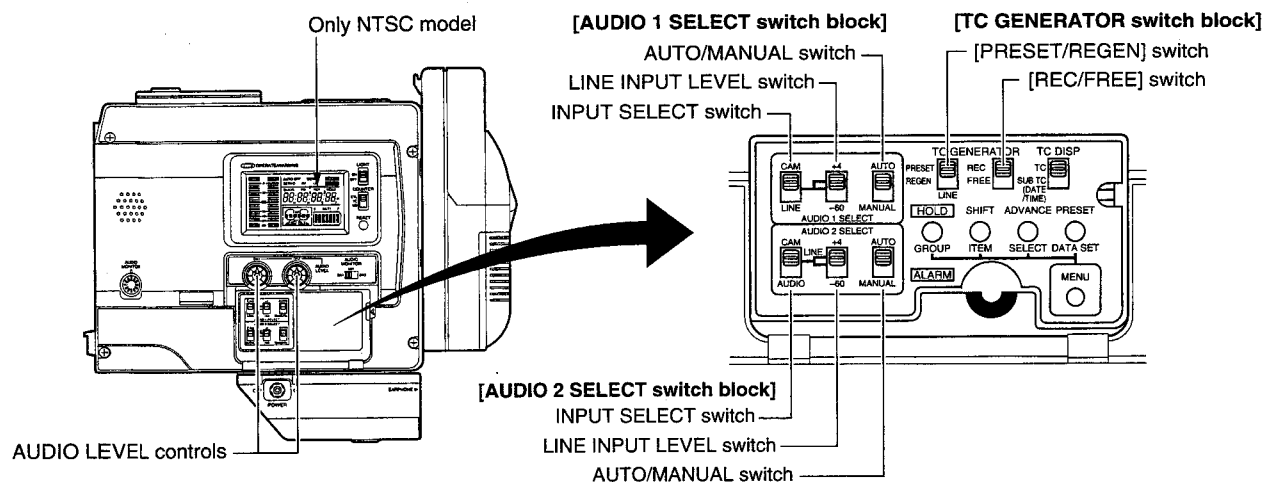
SETUP MENU CONTENTS

Group No.	Setup Menu Name		Counter Display	Contents
1	DRUM HOUR METER		1:dr.02 00 ^H	• Shows the accumulated running time of the head drum. (200 hours in this example)
2	TAPE REMAIN		2:tr.00:30	• Shows the remaining tape time in "hours:mins." (30 minutes)
3	BATTERY VOLTAGE		3:bt.12.5v	• Battery voltage in V. (12.5 V)
4	ITEM	TCG SELECT DROP/NON-DROP [Only NTSC model]	4:tc 0 :dF ↓ nF	<ul style="list-style-type: none"> • Selects time code generator framing mode between drop frame and non-drop frame mode. dF : Built-in TCG runs in drop frame mode. Use this setting when recording time is important. nF : Built-in TCG runs in non-drop frame mode. Use this setting when frame count is important. • Factory setting: nF (Non-drop frame mode)
		U-BIT SLAVE ON/OFF	4:Et 0b:on ↓ oF	<ul style="list-style-type: none"> • Selects whether user's bits are also slave-locked when the VCR is slave-locked to an external TCG. on : Slave locked. oF : Not slave locked. • Factory setting: oF (Not slave locked)
		BATT.TYPE SELECT	4:bAtt:12 ↓ 13 ↓ 14	<ul style="list-style-type: none"> • Set according to the type of battery pack in use. 12 : 12 V (Set when using the NB-G1U or a 12 VDC Flat Shape Type battery pack.) 13 : 13.2 V (Set when using Anton-Bauer Trimpack 13, Magnum 13 or Compac 13.) 14 : 14.4 V (Set when using Anton-Bauer Trimpack 14, Magnum 14 or Compac 14.) • Factory setting: 12 (12 V) <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> • If this setting is wrong, the remaining battery power display and the battery alarm will not function properly. </div> <ul style="list-style-type: none"> • When powered through the DC input connector, the setting is fixed at 12 V.
		LONG PAUSE TIME SELECT	4:Ln 0P:01 ↓ 05 ↓ 30	<ul style="list-style-type: none"> • Sets the time before the VCR in record-pause or stop mode enters the tape protect mode (in which the drum stops rotation). 01 : 1 minute 05 : 5 minutes 30 : 30 minutes • Factory setting : 30 (30 minutes)
		AUDIO LOW CUT-IN SELECT	4:Lc 0t:oF ↓ on ↓ 01 ↓ 02	<ul style="list-style-type: none"> • Selects if low frequency cutoff is applied to audio input signals. Set to ON to reduce microphone wind noise, etc. oF: Both Audio 1/2 CH OFF. on: Both Audio 1/2 CH ON. 01: Only Audio 1 CH ON. 02: Only Audio 2 CH ON. • Factory setting: oF (OFF)

RECORDING

The VCR cannot enter record mode alone. It can enter record mode only when it is connected with a camera.

SWITCH SETTINGS FOR RECORDING



■ Selecting the audio input signals

The AUDIO 1 and AUDIO 2 INPUT SELECT switches can select the input signals independently for the Audio 1 and 2 channels.

● AUDIO 1 INPUT SELECT switch

CAM : Receives the audio signal of the camera microphone.
LINE : Receives the audio signal input through the AUDIO 1 input connector.

● AUDIO 2 INPUT SELECT switch

CAM : Receives the audio signal of the camera microphone. Use this position when the camera uses a stereo microphone.
 • The audio is not input if this position is used with a monaural camera microphone.

LINE : Receives the audio signal input through the AUDIO 2 input connector.

AUDIO 1 : Receives the audio signal selected with the AUDIO 1 INPUT SELECT switch also in the Digital Audio 2 channel. Use this position when the camera uses a monaural microphone.

- Adjust the LINE INPUT LEVEL switch and AUDIO LEVEL controls for the AUDIO 1 channel. The AUDIO LEVEL controls for the AUDIO 2 channel should be ignored.

● Setting the LINE input level

When the LINE input is selected for the Audio 1 or 2 channel, the reference input level can be set according to the audio equipment connected to the AUDIO 1 or AUDIO 2 input connector.

The AUDIO 1 and AUDIO 2 INPUT LEVEL switches can set the reference input levels of respective channels to +4 dB or -60 dB.

■ Selecting the recording level adjustment methods

The AUTO/MANUAL switches can select the recording level independently for the Audio 1 and 2 channels.

AUTO : When sounds greater than the reference input level are input, the recording level is held at the reference level. The recording level does not increase when the input level is low.

MANUAL : The recording level of each channel can be adjusted with the AUDIO LEVEL control.

■ Setting the setup menus

If it is required to cut off low frequencies in the audio input signals (for example, to reduce the wind noise of microphones), set setup menu item "AUDIO LOW CUT-IN SELECT". See page 21 for details.

■ Setting the time code recording function

The VCR records SMPTE(NTSC)/EBU(PAL)-standard time code during recording. Set the switches in the TC GENERATOR block according to applications.

● To record time code as set in the built-in time code generator :

- Set the PRESET/REGEN switch to PRESET.
- Set the REC/FREE switch.

If it is required to record continual time codes across different scenes, set the switch to REC.

- Set the setup menu. (only NTSC model)
 Open the setup menu item "TCG SELECT DROP/NON-DROP" and set the framing mode of the time code generator to drop frame or non-drop frame mode.

● To record a time code in continuation from the existing time code on tape :

- Set the PRESET/REGEN switch to REGEN.

The time taken to enter record mode from record-pause mode is variable depending on the PRESET/REGEN switch position.

When set to PRESET : Approx. 0.8 second

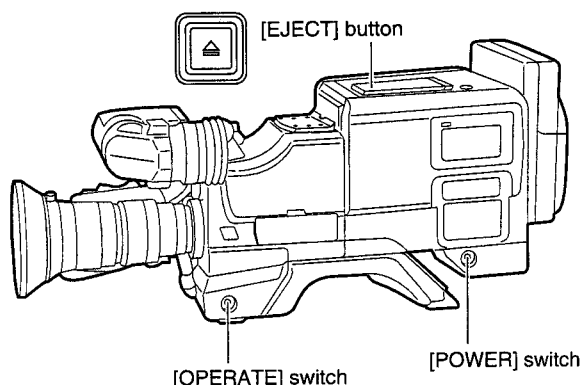
When set to REGEN : Approx. 1.5 second

This switching will cause a shift in the tape position for the REC PAUSE. Therefore, the VCR generate a switching sound.

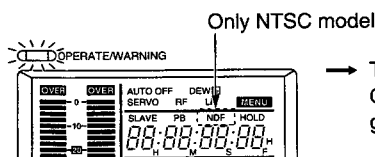
For details on the time code operations including time code presetting, see "TIME CODE OPERATION" on page 26.

■ The sub-time code is used to record the date and time data. For the setting of the date and time data, see page 30.

RECORDING PROCEDURE



1. Set the POWER switch of the VCR to ON.
2. Set the OPERATE switch of the camera to VTR SAVE then, in a while, to VTR ST-BY.



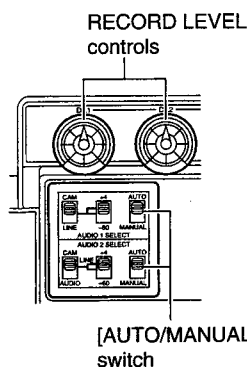
→ The VCR is turned ON so the OPERATE indicator lights in green and the display appears.

3. Press the EJECT button to open the cassette cover, insert a cassette tape properly and close the cassette cover gently.
 - Ensure that the REC switch on the back side of the cassette is set to ON.

→ When the cassette cover is closed, the tape is loaded and the VCR enters record-pause mode.

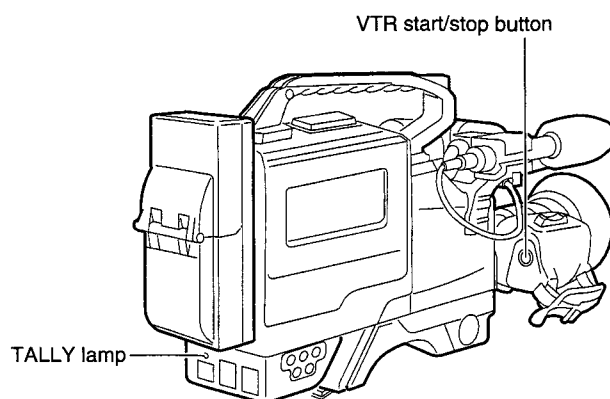
- Use a cassette tape marked DIGITAL S. A S-VHS or VHS cassette cannot be used with this VCR.
- After the cassette cover is closed, it takes about 10 seconds before the VCR is ready for recording.
- See page 25 for the automatic scene change cueing function.

4. Adjust the VCR and camera as required for recording before starting it.
 - VCR : When adjusting the recording level manually :



- Set the AUTO/MANUAL switch to MANUAL and adjust the RECORD LEVEL controls so that the level meter peak does not exceed -5dB, even when large sounds are input.
- For the input from the camera microphone or the -60dB LINE input, the limiter circuit activates to hold the recording levels under 0dB, even when the RECORD LEVEL controls are operated.

- Camera: Adjust the white balance, focusing, zooming, etc. For details, refer to the instruction manual of the camera.



5. Start recording.
 - Press the VTR start/stop button of the camera.
 - The VCR starts recording.

When the VTR start/stop button is pressed, the TALLY lamp of the VCR and the REC tally lamp in the viewfinder start blinking. They turn to continuous lighting when the VCR enters record mode.

6. To let recording pause temporarily :
 - Press the VTR start/stop button of the camera.
 - The TALLY lamp turns off and the VCR enters record-pause mode.

When the VTR start/stop button is pressed, the VCR enters the record-pause mode after rewinding the tape for about 1 to 1.5 second (back-spacing). During the back-spacing, the last section recorded on the tape is played in the reverse direction. However, During play in the reverse direction, a block noise is appeared. You can just use it as a reference for confirming whether recording has been made or not.

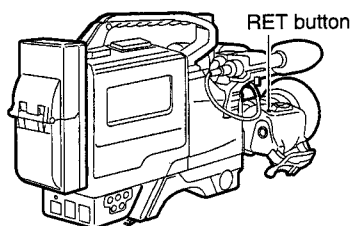
7. To restart recording:
 - Press the VTR start/stop button of the camera.
 - Recording restarts.

8. End recording.
 - Enter record-pause mode and perform the following operations as required.
 - When it is required to unload the cassette tape:
 - Press the EJECT button.
 - When it is required to put the VCR in standby - OFF mode:
 - Press the OPERATE switch of the camera to VTR SAVE.

- A neat transition to the next recorded scene cannot be guaranteed if you end a recording by setting the OPERATE or POWER switch to OFF. Be sure to enter record-pause mode before switching the camera OFF.
- Before recording a scene which is particularly important, perform test shooting to ensure that normal recording is possible.
- The VCR power consumption can be reduced by setting the LIGHT switch and TALLY switch to OFF.

RECORDING

RET button function



■ Recording check

- When the RET button on the camera lens is pressed while the VCR is in record-pause mode, the tape is rewound and played back for about 2 seconds. Holding the RET button allows the rewinding and playing of the tape for up to 10 seconds. The VCR returns to the record-pause mode after the rewinding and playback.
- If the VTR Start/Stop button is pressed during a recording check, the check is stopped and recording starts immediately. As a result, the transition to the next scene in the recorded tape may be disturbed.

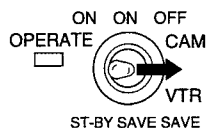
■ Backspace for transition recording

This is the facility for the proper execution of a transition recording of a desired section of a recorded tape.

1. Press the PLAY button in order to play the tape back.
 2. While monitoring the viewfinder, press the STOP button at the scene where you want to start a transition recording.
 3. Press the RET button on the camera lens unit.
→ "Backspace" takes place to start recording at the scene where you pressed the STOP button.
 4. Press the VTR Start/Stop button on the camera unit to begin recording.
 - The RET button function are not available for some cameras. Supported by KY-D29 and KY-19 cameras.
- For the KY-27 series, the products with serial numbers having the following 4 last digits are supported.
Greater than 1219(for U-ver)/1346(for E-ver) (use the figures only as a guidepost)
Unsupported products can be upgraded on request for a charge. Contact the nearest JVC authorized service agent.

VCR Power-Save

- To put the VCR in power-save mode, set the OPERATE switch of the camera to VTR SAVE.
 - The VCR in record-pause mode enters power standby - OFF mode. The display is turned off in this low power consumption mode.
- If you want to record in the Power-Save mode, press the VTR Start/Stop button on the camera, and the VCR power is turned on so that the drum begins to run and starts recording in about 8 seconds. (KY-D29 only)
- To return to record-pause mode from power-save mode, set the OPERATE switch of the camera to VTR ST-BY.



If VCR is Left In Record-Pause Mode

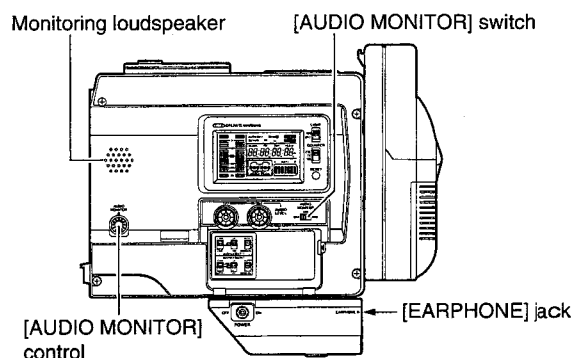
When the VCR has remained in record-pause mode for about 30 minutes, the VCR enters tape protect mode, in which the drum rotation is stopped automatically and the tape tension is released.

- To start recording from tape protect mode, press the VTR start/stop button of the camera; the drum starts to rotate and recording starts in about 8 seconds.

- To return to record-pause mode from tape protect mode, press the VTR start/stop button of the camera twice; the drum starts to rotate.

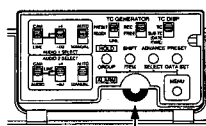
- The time until the VCR enters tape protect mode after it is put to record-pause mode can be set with the setup menu item "LONG PAUSE TIME SELECT" to 1 minute, 5 minutes or 30 minutes.

Monitoring Audio During Recording



The audio input during recording can be monitored through the monitoring loudspeaker or earphone.

- The monitoring audio is not output from the loudspeaker while the EARPHONE jack is in use.
- The AUDIO MONITOR switch selects the audio channels to be monitored.
- The AUDIO MONITOR control adjusts the monitoring volume.
- The loudspeaker or earphone outputs an alarm tone in the case of an abnormal condition occurring with the VCR.

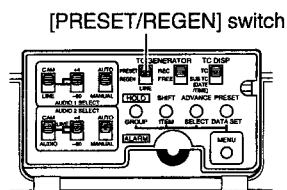


[ALARM] control

An alarm tone is also output when the tape end is reached or when the battery is running down. The alarm tone volume can be adjusted with the ALARM control. For details on the alarm tone, see pages 31 and 32.

- Do not increase the audio monitoring volume too high, otherwise howling with the camera microphone may occur.

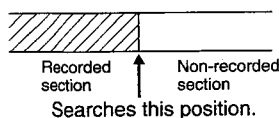
PRESET/REGEN Switch



- Switching the PRESET/REGEN switch in record-pause mode changes the tape position during record-pause according to the switch setting.
- When the PRESET/REGEN switch is switched after having started recording by pressing the VTR start/stop button of the camera, the new setting remains valid in subsequent recording operations.

Automatic scene change cueing

When the VCR is recording something on a virgin tape, the recording is stopped by entering the record-pause mode and the VCR is switched OFF or the cassette is ejected and then reloaded before the next recording, the automatic scene change cueing function ensures a neat transition to the next recorded scene by automatically searching for the end of the last recording.



The automatic scene change cueing operation is performed for about 10 seconds after the VCR is switched ON again or the cassette is reloaded.

This function takes place on the following occasions:

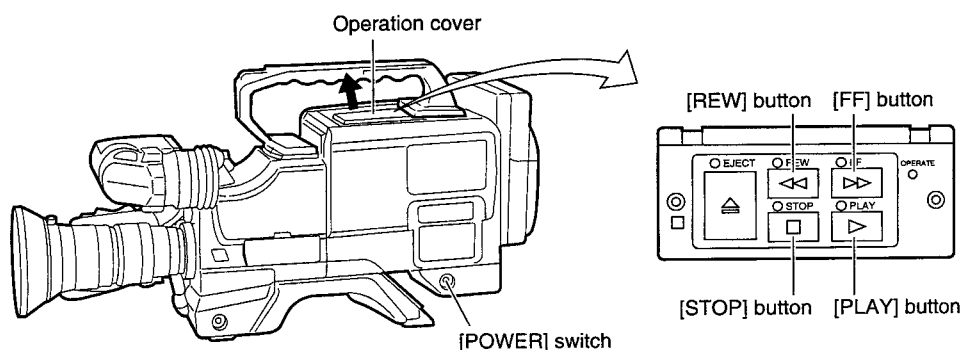
- When the VCR is switched ON after it has been switched OFF in record-pause mode.
- When the cassette is reloaded after it has been ejected in record-pause mode. *Note that proper operation cannot be guaranteed depending on the type of cassette or the tape position where the recording was ended.

- When the RET button on the camera lens is pressed in stop mode. (See the RET button function on page 24.)

NOTES

- If the VTR Start/Stop button is pressed in the middle of the automatic scene change cueing operation, the VTR start/stop function is given priority so a neat transition to the next scene cannot be guaranteed.
- Be sure to use the VTR Start/Stop button to end every recording (because a pilot signal for ensuring a neat transition to the next scene is recorded when this is done.)
- The proper functioning of the automatic scene change cueing cannot be guaranteed if the recording time before entering the record-pause mode is less than 2 seconds.
- The last recorded position cannot be searched if the tape position has been changed from the position where the VCR entered record-pause mode last. The search operation occurs only when the current tape position is less than 2 seconds from the position where the record-pause mode was last entered.

PLAYBACK



PLAYBACK PROCEDURE

1. Set the POWER switch of the VCR to ON, and open the operation cover to put it in OPERATE ON mode.
2. Load a prerecorded cassette tape properly.
3. Press the PLAY button.
 - The PLAY indicator lights up and playback starts.
 - If the VCR is in the record-pause mode, press the STOP button to release the record-pause mode before pressing the PLAY button.
4. Press the STOP button to stop recording.
 - The STOP indicator lights up and the VCR enters stop mode.

- This VCR is not capable of manual tracking adjustment. The tracking is adjusted automatically during playback.
- This VCR is not capable of still image playback.
- A S-VHS or VHS cassette tape cannot be used with this VCR.
- When auto tracking is activated at the start of the play mode, the played video will be interfered with by digital noise. The linear track audio is output in this period.

FAST FORWARD, REWIND

- Press the FF button in stop mode to fast forward tape and press the REW button in stop mode to rewind tape.
- Press the STOP button to stop fast forwarding or rewinding.

- When the tape approaches the end during fast forwarding or rewinding, the tape speed decelerates to protect the tape.

SEARCH

- Press the FF button in play mode to search the tape in the forward direction at about 6 times the normal speed. Press the REW button in play mode to search the tape in the reverse direction at about 6 times the normal speed.
- Press the PLAY button to resume normal playback.

- The audio recorded on the linear track of the tape is reproduced during the search.
- Video noise may be observed or the image may become unstable during the search, but this is not a malfunction.

TIME CODE OPERATION

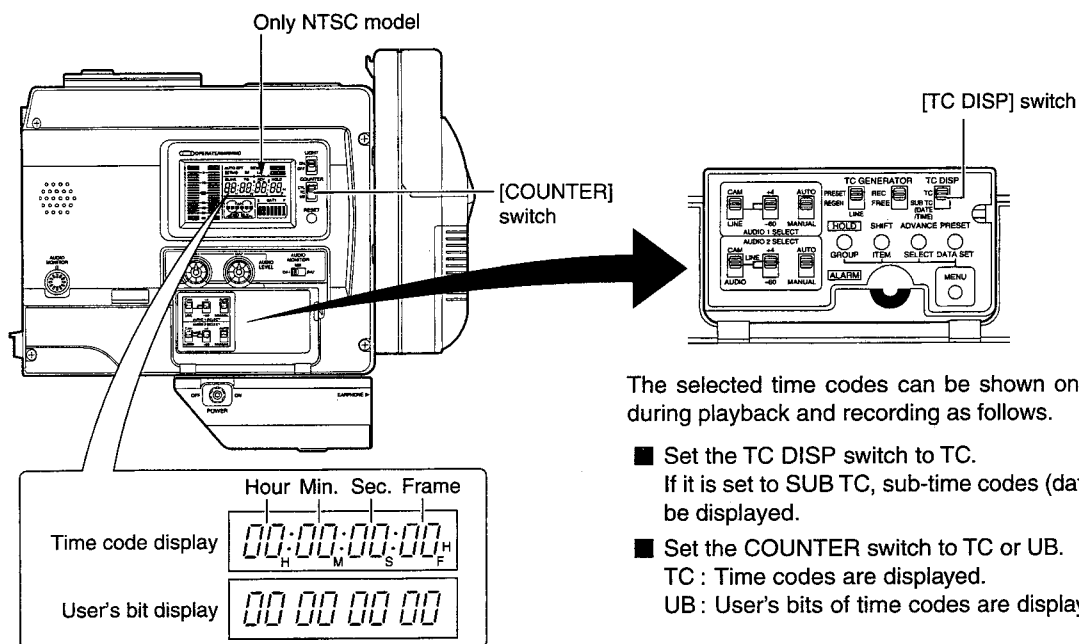
This VCR records 2 time code areas on the tape; the main time code area which contains time codes for use as time data in editing, etc., and the sub-time code area which can optionally contain the date and time data.

- The main time code area contains the recording of SMPTE-standard time codes and user's bits. In play mode, the reproduced time codes or user's bits are shown on the counter display.
- The sub-time code area contains the recording of the date and time data, which can also be shown on the counter display during playback.

- Neither the main time code nor sub-time code data is output through the VIDEO OUT connector.
- The generated time-codes are output from the TC OUT connector.

The following description begins with the handling method of the main time code. That of the sub-time code will be described from page 29 and on.

DISPLAYING TIME CODE



The selected time codes can be shown on the counter display during playback and recording as follows.

- Set the TC DISP switch to TC.
If it is set to SUB TC, sub-time codes (date and time data) will be displayed.
- Set the COUNTER switch to TC or UB.
TC : Time codes are displayed.
UB : User's bits of time codes are displayed.

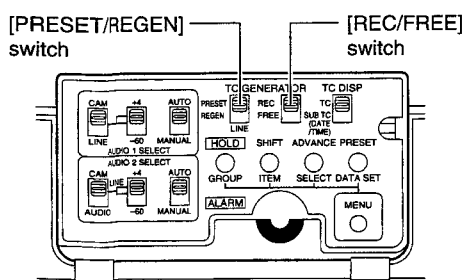
SETTING AND RECORDING TIME CODES

The time code and user's bit data from the built-in time code generator are recorded during recording. The built-in time code generator is operated with one of the following methods.

- Presetting desired data in the time code generator and recording it.
- Slave-locking the built-in time code generator with the data of an external time code generator.
- Reading the time code data from tape and recording continual time codes to it.

Presetting and Recording of Time Code

The time code or user's bit data to be recorded onto tape can be preset to a desired value.



Switch setting

■ Setting the switches in the TC GENERATOR block

- Set the [PRESET/REGEN] switch to PRESET.
- Set the [REC/FREE] switch as follows.
 - REC : The data preset in the time code generator runs only during recording. Use this setting to record continual time codes across scenes when recording them one after another.
 - FREE : The data starts to run from the moment it has been preset in the time code generator.

TIME CODE OPERATION

Drop frame/Non-drop frame modes

With the NTSC format, the actual number of frames per second is about 29.97 frames, while the number of frames assumed for use in time code processing standard is 30 frames. The drop frame mode compensates for this difference by dropping frames 00 and 01 at every minute whose figure cannot be divided by 10. The non-drop frame mode ignores the above difference and does not drop frames.

■ Setup menu setting

Select the framing mode of the time code generator with setup menu item "TCG SELECT DROP/NON-DROP".

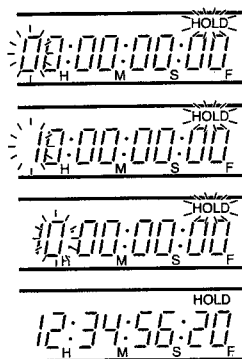
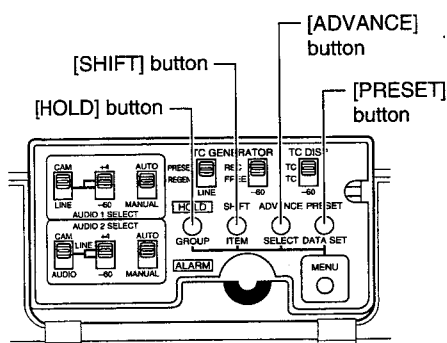
dF : The time code generator runs in drop frame mode. Use this setting when putting importance on the recording time.

nF : The time code generator runs in non-drop frame mode. Use this setting when putting importance on the number of frames.

The NDF indicator on the LCD display lights in non-drop frame mode.



Time Code Presetting Procedure



1. Display time code on the counter display.
Set the COUNTER switch to TC.
• Time code up to 23 hrs. 59 min. 59 sec. 29(NTSC)/24(PAL) frames can be preset.
2. Put the time code generator in preset mode.
Press the HOLD button.
→ The HOLD indicator lights on the display to indicate the preset mode. The first digit of the counter display blinks.
3. Set the value of the blinking digit.
Press the ADVANCE button.
→ The value of the blinking digit changes.
4. Change the blinking digit.
Press the SHIFT button.
→ The blinking digit changes.
5. Set the desired value for all digits.
Repeat steps 3 and 4 for each digit.
6. Preset the set data in the memory.
Press the PRESET button.
→ The set data is saved as the time code generator value.
After the above operation, the HOLD indicator disappears from the display, the counter stops blinking and the time code is preset.
• If the REC/FREE switch is set to FREE, the time code starts to run.

■ If you preset a wrong time code, perform steps 3, 4, 5 and 6 again.

- Pressing the [RESET] button in preset mode resets the time code or user's bit data to 00 00 00 00.
- If you have pressed the [HOLD] button by mistake, press the [HOLD] button again to return to the previous display.

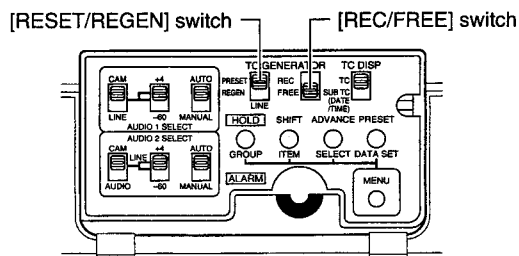
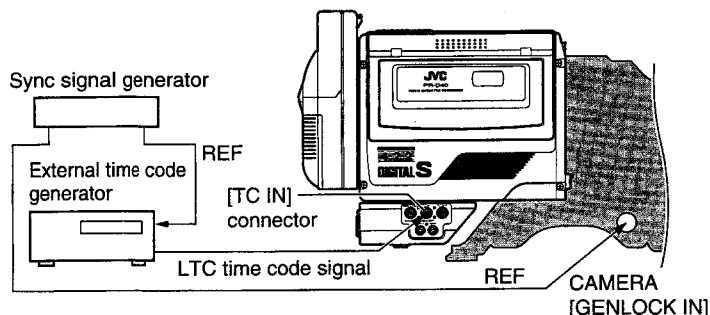
Presetting the user's bit

- Display user's bit on the counter display and perform the same procedure as the time code presetting procedure.
- The user's bit can be specified using numerals or alphabets from 0 to F for each digit.

TIME CODE OPERATION

Recording Time Codes by Slave-Locking the Built-in Time Code Generator with the External TCG

The built-in time code generator can be synchronized (slave-locked) with the SMPTE(NTSC)/EBU(PAL)-standard LTC time code signal which is input through the TC IN connector. Once the slave locking has been carried out, the built-in time code generator runs even when the external time code input stops. Even when the power is switched off, it continues to run on the backup lithium battery.



1. Input the external LTC time code signal in compliance with the SMPTE/EBU standard to the TC IN connector.
2. Display time code on the counter display.
3. Set the switches in the TC GENERATOR block as follows.
 - Set the PRESET/REGEN switch to PRESET.
 - Set the REC/FREE switch to FREE.

■ Setup menu setting

- Set setup menu item "U-BIT SLAVE ON/OFF" as required.
- Set to ON if you want to also slave lock the user's bits to the external time code generator.

The framing mode is set automatically to the same mode as the input time code (drop frame or non-drop frame mode). The NDF indicator lights on the display if the framing mode is the non-drop frame mode.(Only NTSC model)

4. Set and operate the external time code generator.
 - The built-in time code generator is slave-locked with the input external time code data.
 - The SLAVE indicator lights on the display.



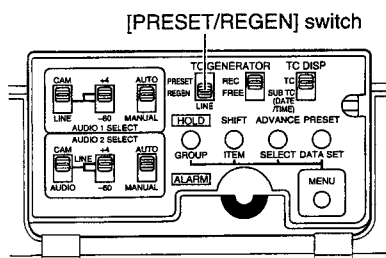
- * If the external time code generator phase is not genlocked with the phase of the camera video signals, the "SLAVE" display will flicker.
- Once slave locking has been made, the built-in time code generator keeps on running even when the external time code generator is stopped.

- While the REC/FREE switch is set to REC, slave-locking will not take place.

Recording Time Codes in Continuance From Time Codes Recorded on Tape

The VCR also incorporates a time code reader. Therefore, when the VCR enters record mode from record-pause mode, it can read the time code data recorded on tape and record continual time codes after it. The recorded user's bit data is identical to the user's bit data recorded on tape.

To make this possible, set the switches in the TC GENERATOR block as follows before starting recording.



When the PRESET/REGEN switch is set to REGEN, the time taken for entering record mode from record-pause mode becomes slightly longer.

Setting

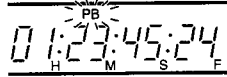
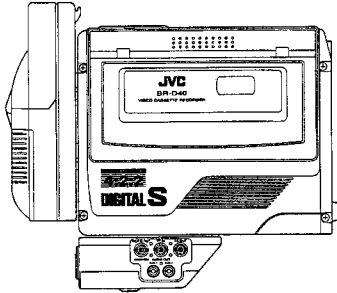
- Set the counter display to display time codes or user's bits.
- Set the PRESET/REGEN switch to REGEN.
 - The time code run mode becomes unrelated to the REC/FREE switch settings.
 - The framing mode of the time code generator becomes automatically identical to the mode used by the time codes recorded on the tape (drop frame or non-drop frame mode).

→ Only NTSC model

TIME CODE OPERATION

REPRODUCING TIME CODES

The VCR incorporates a time code reader which outputs the time codes and user's bits recorded on the played tape is displayed on the counter display. The played time codes and user's bits are not output from the VIDEO OUT and TC OUT connector.

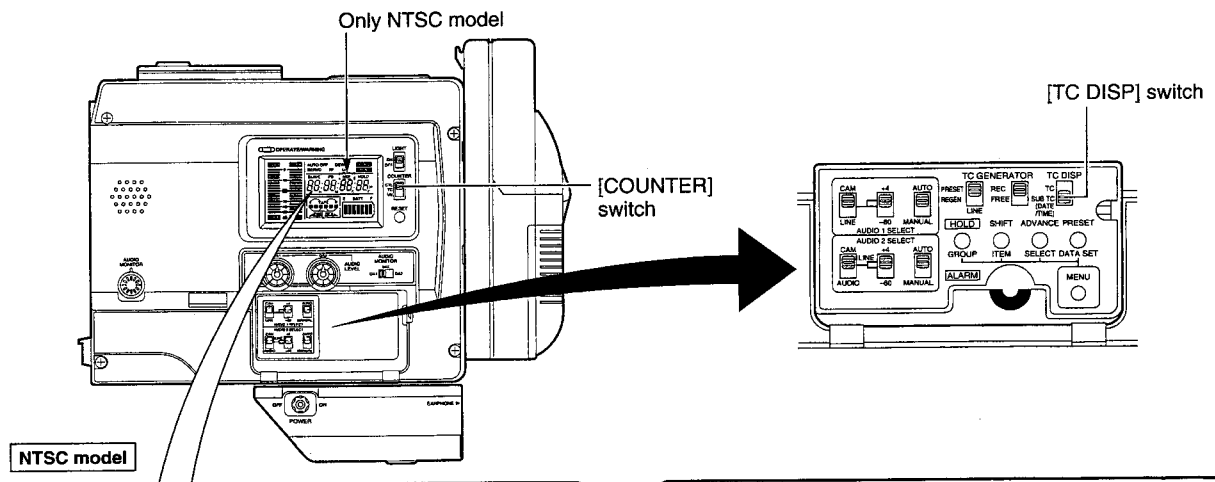


- Set the counter display to display time codes or user's bits.
- Reproduce time codes.
Press the PLAY button.
- The PB indicator lights on the display and the reproduced time code or user's bit is displayed.

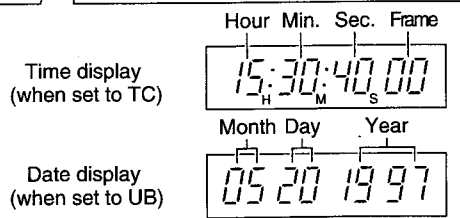
SUB-TIME CODE (DATE, TIME)

The VCR records a sub-time code area as an additional time code recording area to the main time code area. The sub-time code area contains data on the date and time of the day.

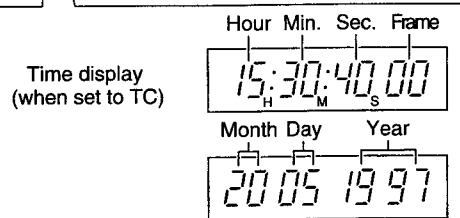
Displaying Sub-Time Code Data (Date and Time Data)



NTSC model



PAL model



The date and time data based on the sub-time codes can be displayed during playback and recording.

- Set the [TC DISP] switch to SUB TC.

- Set the [COUNTER] switch to TC or UB.

When set to TC : Time data (hour, minute, second, frame) is displayed.

When set to UB : Date data (month, day, year) is displayed.

The date and time data based on the sub-time codes can be displayed during playback and recording.

- Set the [TC DISP] switch to SUB TC.

- Set the [COUNTER] switch to TC or UB.

When set to TC : Time data (hour, minute, second, frame) is displayed.

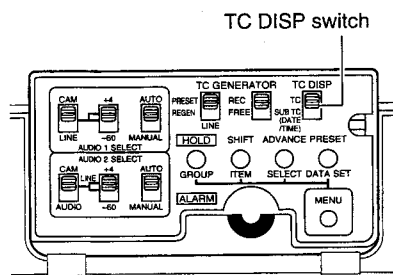
When set to UB : Date data (day, month, year) is displayed.

TIME CODE OPERATION

Setting the Date and Time (Sub-Time Code)

The set date and time data is stored in the sub-time code area on tape.

The set date/time data will continue the counting on the backup lithium battery, even when the power is switched off.



Setting the date

1. Display the date on the counter display.
 ■ Set the TC DISP switch to SUB TC and the counter switch to UB.
2. Press the HOLD button to initiate the setting mode.
 The HOLD indicator lights on the display, indicating that the VCR is in the setting mode.
 The first two digits of the counter display blink.
3. Set the figures of the month(for NTSC)/day(for PAL).
 • Press the ADVANCE button to set the figure of the blinking digit.
4. Similarly, set the figures of day(for NTSC)/month(for PAL) and year by pressing the SHIFT button to change the blinking digit and pressing the ADVANCE button to set its figure.
5. Press the PRESET button to save the set date in the memory.
 The HOLD indicator on the display turns off and the date display stops blinking.

Setting the Time of the Day

1. Display the time data on the counter display.
 ■ Set the TC DISP switch to SUB TC and the counter switch to TC.
2. Press the HOLD button to initiate the setting mode.
 The HOLD indicator lights on the display, indicating that the VCR is in the setting mode.
 The first digit of the counter display blinks.
3. Similarly to the date setting operation, set the figures of the hour, minute and second using the SHIFT and ADVANCE buttons.
 • The hour should be set in the 24-hour mode.
 • The frame cannot be set. It will be fixed to 00.
4. Press the PRESET button to save the set time in the memory.
 The HOLD indicator on the display turns off and the time starts to count.

Reproducing the Date and Time (Sub-Time Code)

The recorded date and time data is not included in the video signal output from the VIDEO OUT connector or the time code signal output from the TC OUT connector.

The data is displayed only on the counter display of the VCR during playback of the tape.

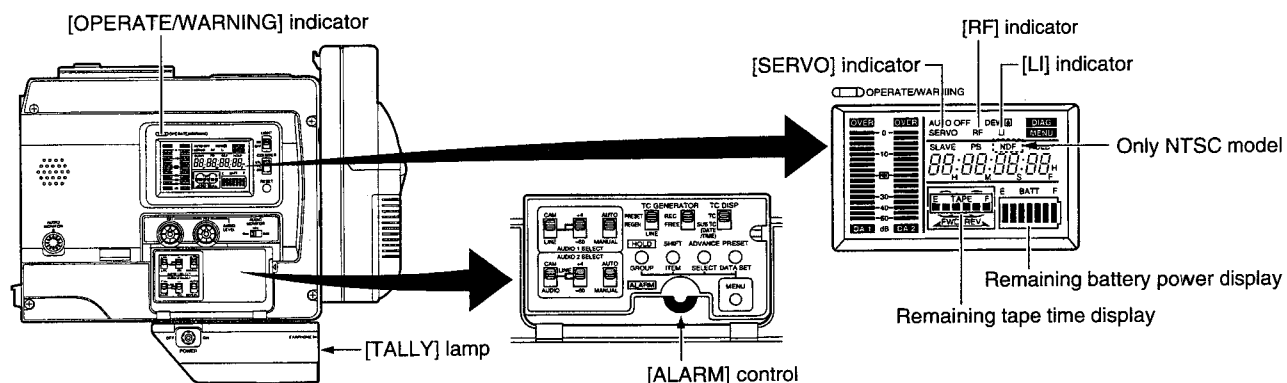
- When a tape recorded with this VCR is played on a desk-top type DIGITAL S VCR (e.g. JVC BR-D50/D80/D85, etc.), the date or time data is shown on the sub-time code display of the DIGITAL S VCR. The time data is displayed when the COUNTER switch of the DIGITAL S VCR is set to TC, and the date data is displayed if the switch is set to UB.

TROUBLESHOOTING GUIDE

The VCR provides warning on troubles in the operating situations using indicators, LCD displays and monitor tones. The warning consists of the following two kinds of information.

- Alarm indications : These indications are given to provide warning on the VCR situation, for example when the tape or battery pack should be replaced.
- Error code display : In case an error occurs with the VCR operation, the VCR applies self-diagnostics of the cases and shows the diagnostics results on the counter display. At the same time as displaying an error code display, the VCR stops operation automatically or ejects the cassette tape.

ALARM INDICATIONS



- The LCD display, OPERATE/WARNING indicator, TALLY lamp and alarm tone act depending on situations as shown in the following table.

Alarm Indications				Situation	VCR Behavior, Treatment
LCD Display	OPERATE/WARNING indicator	TALLY lamp	Alarm Tone		
SERVO indicato	●	●	— — — — —	Lights in case of drum servo trouble during recording. Lights when input video signal is disturbed or VCR is subject to a shock. (Displayed only in record mode)	Operation : Continues. Treatment : • Check input video signal. • Signal is disturbed when VCR is subject to a violent shock. * In other cases, consult your dealer or nearest JVC-authorized service agent.
RF indicator	●	●	— — — — —	Lights in case of video head clog. (Displayed only during back-spacing for record-pause mode.)	Operation : Continues. Treatment : Clean the head with the special head cleaning tape.
LI indicator	—	—	—	Lights when lithium battery for time code generator and date/ time data backup is exhausted.	Operation : Continues. Treatment : Replace it with a new lithium battery. See page 34.
Remaining tape time E TAPE ■ □ □ □ □ □	●	●	— — — — —	• Approx. 2 min. before tape end. (Displayed only in record or record-pause mode) The TALLY lamp and alarm tone are activated only in the record mode.	Operation : Continues.
E TAPE ■ □ □ □ □ □	●	●	— — — — —	• When tape has ended completely	Operation : Stops.
Remaining battery power E BATT ■ □ □ □ □ □	●	●	— — — — —	When the remaining battery power is low.	Operation: Continues. Treatment: Replace battery pack early.
E BATT ■ □ □ □ □ □	●	●	— — — — —	(Except for play/search mode)	
E BATT ■ □ □ □ □ □	●	●	— — — — —	When the battery power drops to an insufficient level.	Operation : Stops automatically and operate turns OFF.

- The OPERATE/WARNING indicator usually lights in green to indicate OPERATE ON mode. In case of alarm, its color turns red and acts as shown in the above table.
- The alarm tone output is superimposed in the audio signal output from the monitoring loudspeaker or EARPHONE jack. The volume of the alarm tone can be adjusted with the ALARM control.

Display symbols ● : Steady lighting. ○ : Blinking once per second. ⊗ : Blinking 4 times per second.

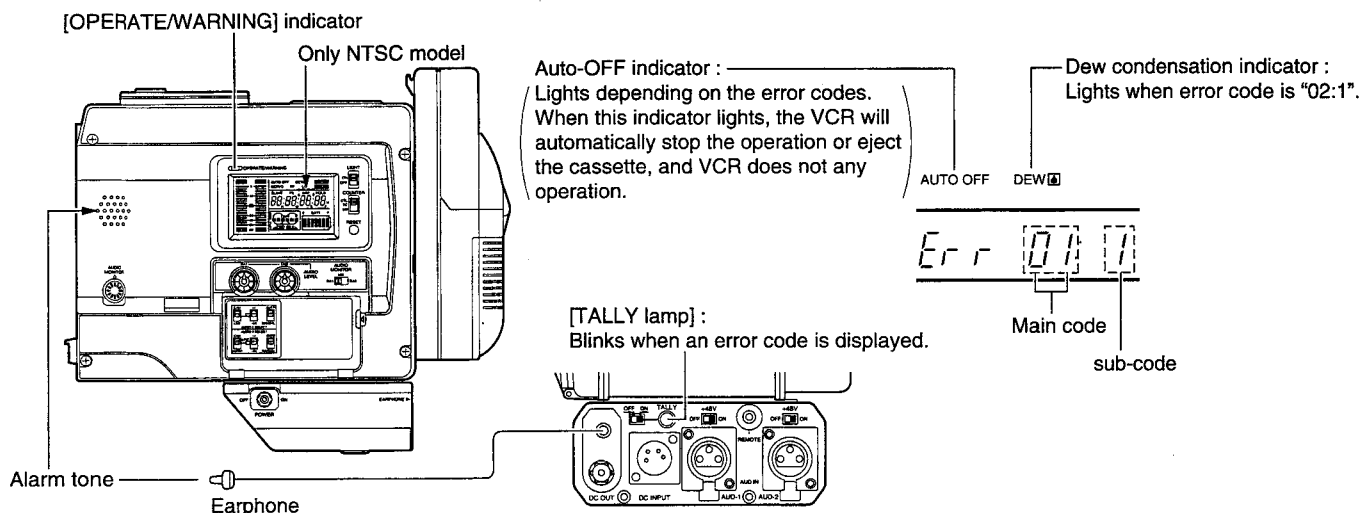
— — — — — : Continuous sound. — — — — — : Sound interrupted once per second. — — — — — : Sound interrupted 4 times per second.

* Refer to "1.5 How to detect the alarm" in Page 1-20 of the service manual.

TROUBLESHOOTING GUIDE

TROUBLES WITH *ERROR CODE OUTPUTS

In case of trouble during operation of the VCR, it applies self-diagnostics to identify the cause and displays the result in the form of an error code. The error code consists of the "main code" which indicates its contents and the "sub-code" which indicates the details. At this time, the LCD display, the OPERATE/WARNING indicator and alarm tone also act according to the current VCR situation.



OPERATE/WARNING Indicator	Alarm Tone	Display	VCR Operation
Red. blinking	Continuous	"Error code"	• Automatically ejects the cassette. It can be inserted again.
		"Error code" plus "AUTO OFF"	• Automatically stops operation or eject the cassette. (Auto OFF*). The VCR does not accept any operation.
Red, steady lighting	Intermittent	"02:1" and "DEW"	• Dew is condensed in the VCR. The VCR does not accept operation until indicators disappear from the display.

★ In the Auto OFF status, it is impossible to operate the VCR. This condition can be corrected by switching the POWER or OPERATE off and then switching it ON again. If the same trouble occurs again after the power is turned ON, there may be a failure in the VCR. Please consult your dealer or nearest JVC-authorized service agent.

This VCR is microcomputer-controlled equipment, which may malfunction due to external noise or interference. In this case, switch the VCR OFF, remove the lithium backup battery, and switch the VCR ON again after a few seconds.

Error Code	Error Details	VCR Operation	Treatment
01 : 1	Tape sensor LED wire is disconnected	Ejects cassette and does not accept any operation while the error is displayed.	Switch power ON again.
02 : 1	Condensation (dewing)	Does not accept any operation while the error is displayed. When condensation disappears, the indicators turn off.	Leave the VCR with the power ON, until "DEW" display disappears.
32 : 1 32 : 2	Tape loading impossible.	Ejects cassette	Insert cassette again.
33 : 1	Tape unloading impossible.	Stops operation. Does not accept any operation.	Switch the power OFF and then switch it back ON. However, the tape may be damaged depending on the situation. So consult with the JVC authorized service agent.

Error Code	Error Details	VCR Operation	Treatment
56 : 3 to 56 : 8	Tape is cut or tape is slack.	Ejects cassette.	Check cassette and insert again if it is OK.
57 : 1 to 57 : 4	Tape end sensor error.	Rewinds tape to confirm. If tape end is detected again, ejects the cassette.	Check cassette and insert again if it is OK.
58 : 1 to 58 : 4	Tape beginning sensor error.	Fast forwards tape to confirm. If tape beginning is detected again, ejects the cassette.	Check cassette and insert again if it is OK.
70 : 1	Drum rotation stopped.	Stops operation. Does not accept any operation.	Switch the power OFF and then switch it back ON. However, the tape may be damaged depending on the situation. So consult with the JVC authorized service agent.
71 : 1	Capstan rotation stopped.	Stops operation. Does not accept any operation.	
72 : 1 to 72 : 5	Supply reel rotation error.	Stops operation. Does not accept any operation.	
72 : 7	Supply reel rotation error due to tightly wound tape.	Ejects cassette.	Check cassette and insert again if it is OK.
73 : 1 to 73 : 4	Take up reel rotation error.	Stops operation. Does not accept any operation.	Switch the power OFF and then switch it back ON. However, the tape may be damaged depending on the situation. So consult with the JVC authorized service agent.
73 : 7	Take up reel rotation error due to tightly wound tape.	Ejects cassette.	Check cassette and insert again if it is OK.

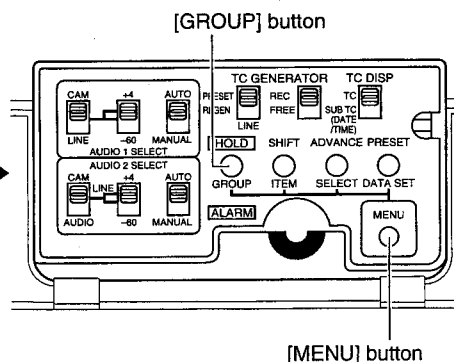
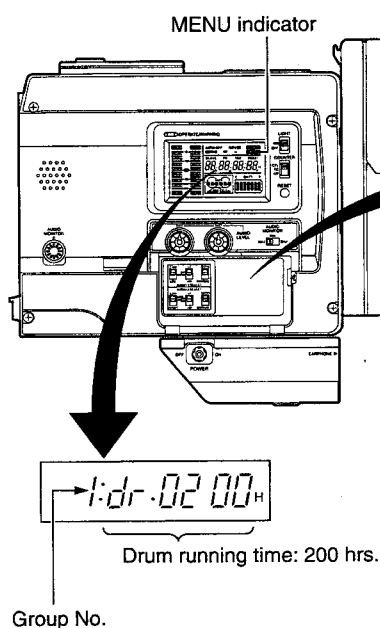
TROUBLES WITHOUT ERROR CODE OUTPUT

Symptoms	Check points
VCR power cannot be switched ON.	<ul style="list-style-type: none"> Is power supply connected properly? Is battery pack recharged? Even when the POWER switch is set to ON, VCR power cannot be switched ON if the camera's OPERATE switch is not set to ST-BY or, in case of playback, until the VCR's operation cover is opened. When the lithium battery is depleted, the power should not be turned on.
Recording is not possible.	<ul style="list-style-type: none"> Is REC switch of cassette set it to ON? If it is OFF, set to ON.
Cassette is ejected.	<ul style="list-style-type: none"> Is the cassette in use a DIGITAL S cassette? VHS or S-VHS cassettes are ejected whenever they are inserted.
Noise interferes with playback video.	<ul style="list-style-type: none"> Video head may be clogged with dirt. Clean head with the special head cleaning tape.
Time code or date/ time data are not displayed on the monitor screen.	<ul style="list-style-type: none"> Time code and date/time data are not displayed on the monitor screen during recording or playback of VCR. The data is shown only on the counter display.
Time code and user's bit data are not displayed on the counter.	<ul style="list-style-type: none"> Is TC DISP switch under the side panel cover set to SUB TC? If it is, set the switch to TC.
Remaining battery power display is incorrect.	<ul style="list-style-type: none"> The setup menu item "BATT. TYPE SELECT" may not be set correctly according to the type of battery in use. If the menu item setting is wrong, set it correctly by opening setup menu item "BATT. TYPE SELECT".
Battery alarm is displayed and VCR enters OPERATE OFF mode even when a fully charged battery is used.	
The operation of the PLAY, REW, or FF button is not accepted.	<ul style="list-style-type: none"> The unit is not in REC PAUSE mode. Press STOP button to cancel the REC PAUSE, then enter the desired mode.

GENERAL

HOURLY METER DISPLAY

The VCR can display the running time of the drum as the hour meter data on the counter display.
The hour meter can be displayed by selecting setup menu Group 1.



1. Put the VCR to OPERATE ON mode.
2. Press the [MENU] button to enter the setup menu mode. The MENU indicator lights on the display and the setup menu is shown on the counter display.
3. Press the [GROUP] button to display setup menu Group 1. The drum operating hour data is shown on the counter display.
4. Press the [MENU] button to return to the normal mode.

HOW TO REPLACE BACKUP LITHIUM BATTERIES

This unit uses a lithium battery to backup the time code and date/time data.

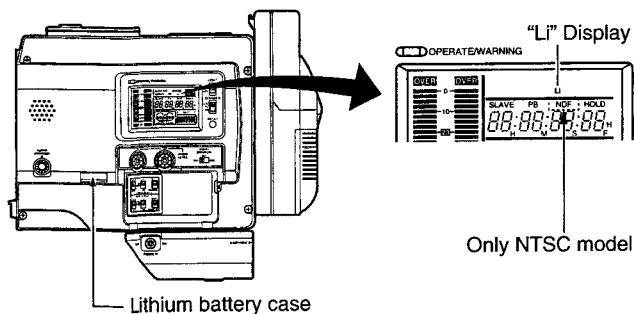
Install the provided lithium battery before actually using the unit.

CAUTION

If the unit is not used for a lengthy period of time, remove the lithium battery. If the voltage of the lithium battery is low, the set may malfunction.

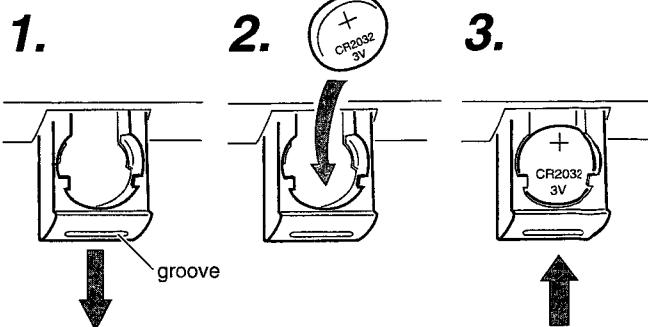
• Lithium battery : CR2032

When the lithium battery is not in place or the battery is running down and requires a replacement, the "L" in the LCD display will light up.



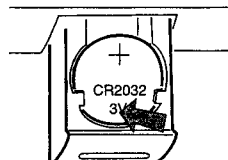
- Replace lithium batteries with the OPERATE switch ON. Doing it with the OPERATE switch OFF will cause the loss of backup data.

HOW TO INSTALL THE LITHIUM BATTERY



1. Place a flat-blade screwdriver in the groove of the lithium battery case and lower it.
2. Slide the battery into place with its + - marked surface facing upward.
3. Push the lithium battery case back into the unit.

HOW TO REMOVE LITHIUM BATTERIES



- If you press the lithium battery at the shown place, it will easily be removed.

SPECIFICATIONS

General

■ Format	: DIGITAL S
■ Tape width	: 12.65 mm
■ Tape speed	: 57.737 mm/sec. (U-ver) : 57.795 mm/sec. (E-ver)
■ Signal format	: NTSC (U-ver) : PAL (E-ver)
■ Record/play time	: 104 minutes (with a DS-104 cassette)
■ FF/rewind time	: Approx. 4 minutes (with a DS-64)
■ Power supply	: 12 V DC (11 to 15 V DC)
■ Power consumption	: Max. 28 W (22 W in record mode)
■ Camera power	: 12 V, max. 1.7 A (max. 20 W)
■ Auxiliary power output	: 12 V DC : max. 0.1A (11 to 15 V DC)
■ Dimensions	: 294.5 (W) × 268.5 (H) × 142 (D) mm
■ Weight	: Approx. 4 kg (net weight) : Approx. 5 kg (including NB-G1U battery pack and tape)
■ Operating temperatures	: 0°C to 40°C (32°F to 104°F)
■ Operating humidity	: 30% to 80%RH
■ Storage temperatures	: -20°C to 60°C (-4°F to 140°F)

Video Signal System

■ Video input (50-pin)	: Component signal input
■ Composite video output	: 1 Vp-p, 75ohm, unbalanced
■ Sampling frequencies	: Y : 13.5 MHz. R-Y/B-Y : 6.75 MHz.
■ Quantization	: 8-bit
■ S/N	: More than 52 dB (during BR-D80/D50 reproduction with component output)
■ Resolution	: More than 410 lines

Audio Signal System

■ Number of channels	: PCM × 2, cue track × 2
■ Audio inputs	: 50-pin connector input : -20 dBs, 10kohm, balanced : 50-pin line input : +4 dB, 10kohm, balanced : -60 dB, 3kohm, balanced
■ Audio output	: -6 dBs, low impedance, unbalanced
■ Earphone output	: -60 to -17 dBs, at 8ohm, load
■ Sampling frequency	: 48 kHz
■ Quantization	: 16-bit
■ Frequency response	: 20 Hz to 20 kHz (PCM)
■ Dynamic range	: More than 85 dB (PCM) (during BR-D80/D50 reproduction)
■ Wow & flutter	: Below measurable limit

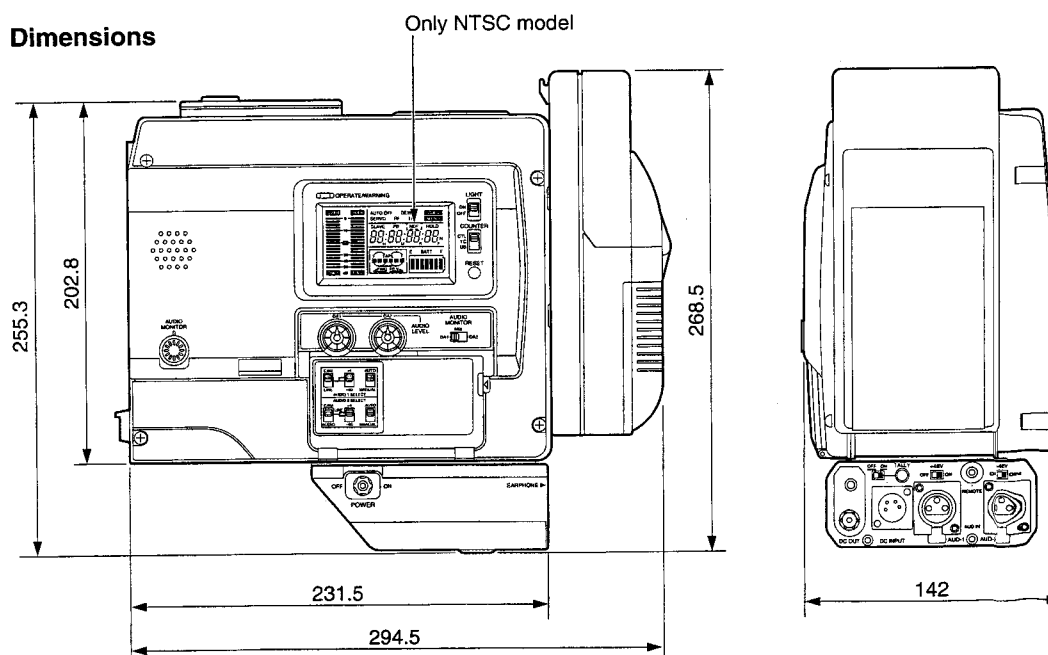
Time Code System

■ Time code signal	: Compliance with SMPTE standard(U-ver) : Compliance with EBU standard(E-ver)
■ LTC input	: 0 +/-6 dBs, high impedance, unbalanced
■ LTC output	: 0 +/-6 dBs, low impedance, unbalanced

Accessories

■ Carrying handle	: × 1
■ Lithium battery (CR2032)	: × 1

Dimensions



Design and specifications are subject to change without notice.

Unit: mm

JVC

VICTOR COMPANY OF JAPAN, LIMITED

